No Recession in Eating p. 43
Better Thermal Process p. 89
Multi-Packs on the Move p. 76

MARCH 1958

$1.00

FOOD ENGINEERING

A McGRAW-HILL PUBLICATION

FOR MANAGEMENT IN MANUFACTURING, PACKAGING, MARKETING

Safeway buying committee judges your food products

Canco's easier-to-open frozen food container has a new sparkle!

A NEW *bright*-white fibreboard body, with clear white metal ends, accounts for its sparkling appearance. This brilliant background enhances any label design.

Canco's exclusive side-seam makes *this* container a pleasure to open, too. Simply slip a knife under the seam and pry. No muss, no fuss, no danger of spilling, and the edges fold back to make serving easy!

This finer container stores efficiently, is handy to hold. It's wax-sprayed inside to make it leak-proof. Can be used with automatic filling and closing machines. Ideal for fruits and berries and well-suited for many other foods.

* * *

Whether you select the fibreboard container or the metal can whose popularity with frozen food packers is growing so rapidly—*remember*, your Canco salesman is a packaging specialist ready and anxious to serve *you!*

CANCO **American Can Company** *New York · Chicago · San Francisco*

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FOOD ENGINEERING

MARCH 1958

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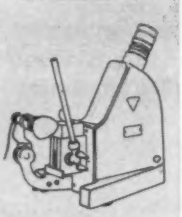

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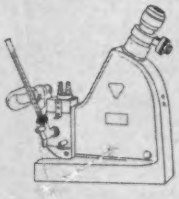

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Identifies samples whose indexes are close together; accurate to .00003.

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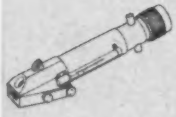
Direct readings to 0.1 % by transmitted or reflected light; 0-25 % dissolved solids range.



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Direct readings to 0.2 %; choice of 0-60 % or 40-85 % dissolved solids range.

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Direct readings of flaxseed, soybean samples to nearest ½ iodine-number unit; estimates to 1/10.

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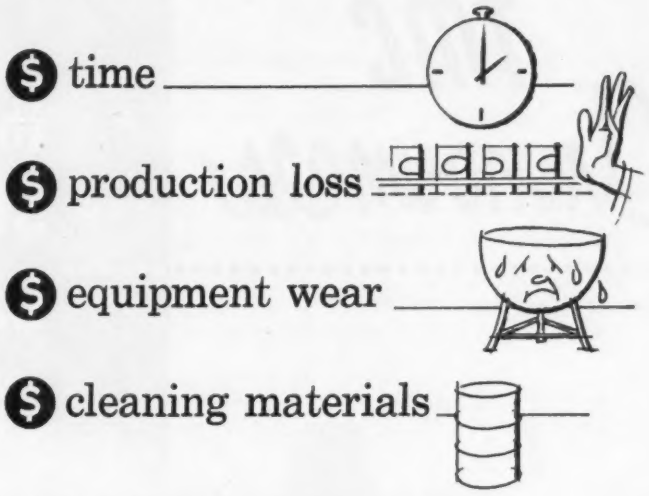
Add up your total cleaning costs...



and see how you save with

OAKITE SPEED-CLEANING

Take a new hard look at any cleaning job in your plant. Notice how the big costs are hidden at first—the time it takes... equipment out of production... possible damage to equipment. Compared with these major costs, the material itself is a minor cost.

That's why buying a cleaning material at price-per-pound can be the most expensive way in the end. It's why safe Oakite speed-cleaning gives you low-cost end results—always.

And here's an interesting point. Consider the low concentration you need with an Oakite compound compared with an ordinary cleaning material, then figure the cost *per gallon of solution.* It turns out that you save even here—that Oakite quality compounds actually cost less!

Find out about the big benefits that go with Oakite methods and materials, Oakite service and know-how. Call your local Oakite man or write for free booklet on food plant sanitation to Oakite Products, Inc., 26G Rector Street, New York 6, N. Y.

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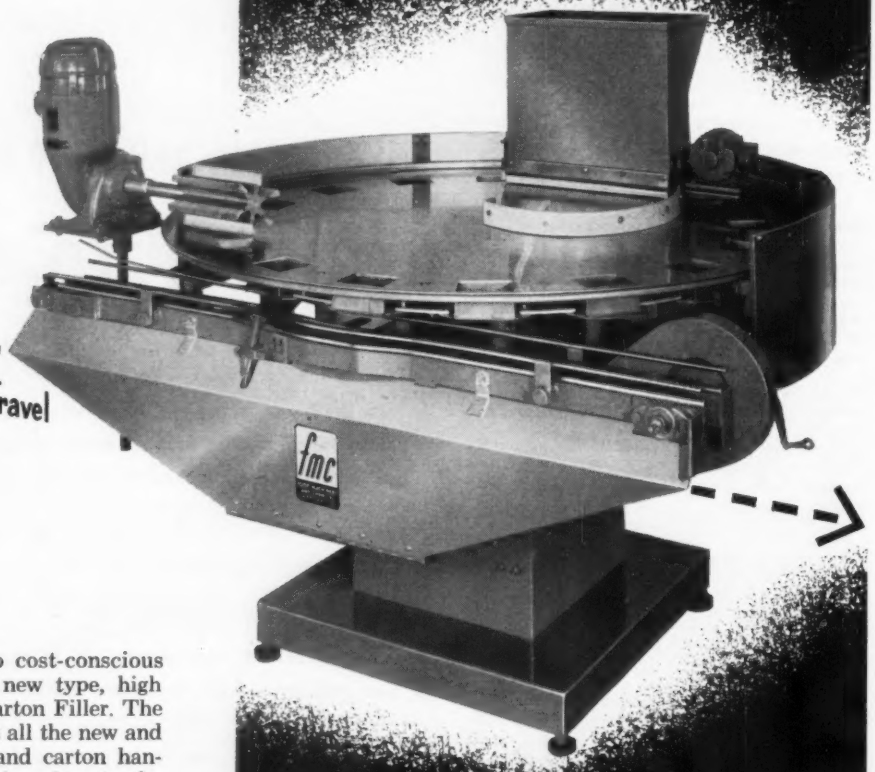
fmc Announces

the NEW Straight-Line Carton Filler



with Straight-Line Carton Travel
For Highest Speed

Sure to be of interest to cost-conscious frozen food packers is this new type, high speed FMC Straight-Line Carton Filler. The revolutionary design includes all the new and proven principles of filling and carton handling that provide substantial savings to the packer. For example: synchronized straight-line carton travel for higher speeds; accurate pre-measured filling with telescopic filling pockets; exclusive FMC *"No carton-No fill"* device that eliminates waste; individual *cut-off gates* on each pocket replaces conventional dead plate design, and provides accurate, close tolerance filling while eliminating product damage; vertical adjustment of pockets for volume requirements – pocket area remains constant; feed conveyor adjustable to accommodate variances in carton dimensions; change parts available to adapt machine as retail or institutional model. Accessories for fully automatic operation include a rotary brush, vertically and horizontally adjustable; also, automatic feed hopper with agitator. Get all the facts on this machine today.

FOR TOP OPENING CARTONS—
MODEL 16-S (ILLUSTRATED WITH ACCESSORIES), FOR RETAIL SIZE, SPEEDS TO 240 CPM—
MODEL 8-S FOR INSTITUTIONAL SIZE, SPEEDS TO 110 CPM

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TRENDS & FORECASTS

SPECIAL

FOOD ENGINEERING

SERVICE to EXECUTIVES

Business will turn up before year's end, McGraw-Hill's Dept. of Economics predicts. Principal reason is rising consumer income. Other factors are turn-around in inventory, defense spending, and easier credit.

Consumer inclination to buy durable goods has taken sharp drop, University of Michigan survey shows. Since durables compete with food for consumer dollars, this can spell new opportunities for food industry.

Cost of marketing food increased 4% in '57, USDA reports. Rise is about triple usual annual increase and is greatest since 1951.

Prices of tin cans were scheduled to rise 2.3% on March 10. Topping a 4% boost last May, increase stems from higher labor and materials costs.

Home space for frozen foods is increasing. Sold last year were 4,275,000 refrigerator-freezers and 925,000 freezers. Store cabinets remain short.

About 40% of fresh meat now is prepackaged. And packers are exploring methods to permit more plant packaging—including freezing, dehydrofreezing, precooking, radiation, and antibiotics.

Total supply of feed grains and other concentrates for 1957-58 is placed at 218 million tons, up 19%. Lower feed prices and more favorable livestock-feed price ratio portends more meat production this year.

Sales of canned and frozen American-Oriental foods have increased from $5 million to nearly $30 million in the past 10 years, according to Chun King's president, Jeno Paulucci. Reason? Quality items conveniently prepared at home keep more families out of Chinese restaurants.

Reversing a 25-year downward trend, per capita consumption of potatoes has increased from 105 to 118 lb. Boost stems mostly from processed items—chips, dehydrated, flour, and frozen French fries.

Candy consumption exceeded 3 billion lb. in '57, up 5%, with a 3-5% increase forecast in '58 by NCA. Many candy makers are modernizing.

25% less tomato juice was packed last year (28½ million cases). Tomato sauce dropped 42% (to 6.86 million cases). Tomato puree was down 27.5% (3.45 million cases). Catsup and chili sauce were off correspondingly.

Canned, Frozen Exports Gain

Total food imports dropped at least 5% in 1957, incomplete figures indicate. And food exports will be down slightly from the 2½-year record set rate reached last summer. However, exports of canned foods, which account for nearly half of total processed food exports, are up slightly. Frozen food shows a more sizable gain.

In 1958, total agricultural trade is expected to stay on a fairly even keel. Europe will remain the biggest market for all U.S. food, including canned and frozen. Latin America, largest supplier of raw materials, may buy somewhat fewer packaged foods because U.S. trade restrictions have

See Developments to Watch p. 17

STICKY
FOOD PRODUCTS

Lining hoppers, chutes, feeders, mixers, packaging machines, etc. TEFLON*—the slipperiest solid material known—keeps difficult powders and other materials flowing freely. Eliminates need for vibrators. Prevents delays. Assists in process automation.

Facing guide rails of conveyors and packaging machines—delicate products are protected, packages are unmarred, no "jam-ups" occur.

On work surfaces—clean-up time is reduced to a minimum and sanitation is greatly improved by this chemically inert, non-contaminating, non-absorbent, tasteless, odorless material.

Covering candy bar frames, cookie flats, bakery rolls, proving pans—sticky products "come clean" as if by magic.

Cementable TEFLON easily applied. Cementable TEFLON, Garlock No. 8536, with one side treated for application to metal, wood, glass, concrete, or other surface with standard commercial adhesives, is now available in economical thin-section (.005" to .060") continuous tapes up to 12" wide, and in 1/16" and thicker sheets up to 48" x 48" in size.

*du Pont Trademark

For prompt service, contact one of The Garlock Packing Company's 30 sales offices and warehouses throughout the U.S. and Canada or write for Bulletin AD-158.

United States Gasket Company
Camden 1, New Jersey

United States Gasket *Plastics Division of* GARLOCK

Trends & Forecasts

increased her shortage of U. S. dollars.

Processed food imports still greatly exceed exports. Total food imports ran close to $3 billion in 1956, of which manufactured foods accounted for about two-thirds. Total food exports totaled $2.7 billion in '56, about 10% of which represented processed foods.

Winter Vegetables off 15%

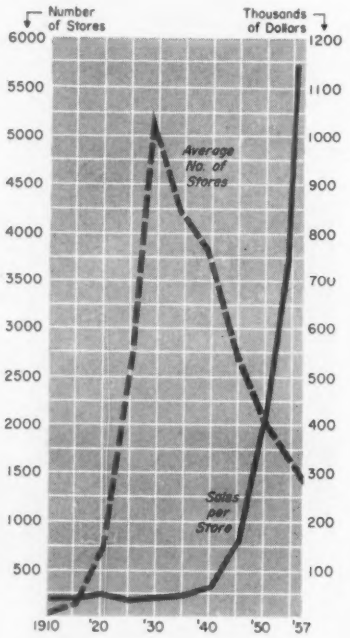
Winter vegetable production for 1958 is now expected to be 15% less than in '57 and 18% below average. That is the USDA Crop Reporting Board forecast. Losses from below freezing temperatures in Florida on February 4 and 5 are reflected in the figures.

Greatest reductions are indicated for tomatoes, sweet corn, carrots, snap beans, green peppers, cauliflower, and cucumbers.

Smaller losses are reported for celery, eggplant, escarole, broccoli, lettuce, and Brussels sprouts.

Only increases are for cabbage, beets and artichokes.

Shipments of Florida vegetables from since Mid-December to February were less than half those during the same period a year ago. Avail-



DRAMATIC TREND to fewer food stores and skyrocket increase in volume of sales per store is shown in this chart of Kroger operations. Sales job of food manufacturers is changing accordingly.

← For more data, circle this page number on card at back

What makes

V-Belts with the Green Seal

your best belt buy—

by far

A Special tension members of steel cable or exclusive, synthetic Triple-Tempered (3-T) Cords—carefully tempered with Tension, Temperature and Time for maximum strength with minimum stretch.

B Tension and compression sections of mildew-inhibited rubber compounds—designed to the job—and manufactured to team perfectly with whatever type load-carriers are used.

C Envelope of exclusive, bias-cut fabric impregnated with a minimum dusting, mildew-inhibited, friction-balanced rubber compound for long running without sticking or grabbing in the grooves.

—AND IT PAYS OFF IN

Dimensional Stability for belts that don't shrink or stretch in storage — for matched sets that *stay* matched

High Strength and Low Stretch on the drive—for maximum resistance to shock loads—minimum creep and take-ups

Clean, Smooth-Running Operation for maximum trouble-free, horsepower hours of operation—lowest possible power transmission costs

—SO NEXT TIME YOU NEED V-BELTS

— be sure you get belts with the Green Seal. See your Goodyear Distributor for details. Or write Goodyear, Industrial Products Division, Lincoln 2, Nebraska, or Akron 16, Ohio.

DIMENSIONALLY STABLE V-BELTS with the GREEN SEAL by

GOODYEAR

60 GOODYEAR ANNIVERSARY

THE GREATEST NAME IN RUBBER

Watch "Goodyear Theater" on TV—every other Monday, 9:30 P.M., E.S.T.

Green Seal—T.M. The Goodyear Tire & Rubber Company, Akron, Ohio

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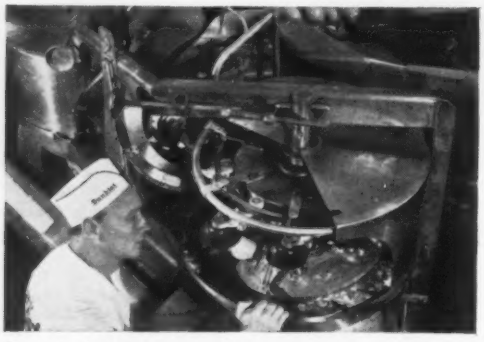
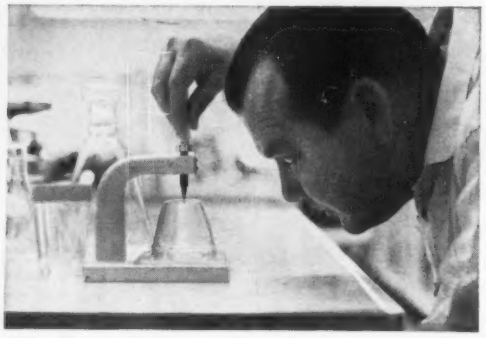
One look at the huge, sprawling buildings at one of the Exchange Products plants and you know that big things are happening inside. For here *citrus* is king. Trucks pour in with fresh fruit from groves all over California and Arizona. Conveyer belts hum along in every direction. And Exchange products are shipped to nearly every part of the world.

Why 'Exchange' products serve you better



Utmost cleanliness is the watchword at Exchange Products plants. Everything has that "just washed-down" look. Every four hours, extraction equipment is completely cleaned. Every third day, the entire plant closes down for a thorough washing.



Exchange quality is assured by constant checking in extensive testing laboratories. In fact, rigid quality controls have been set up *throughout* the plant to make sure that every product measures up to Exchange quality. Sunkist produces more than 400 different citrus products.

The world's largest citrus research department is maintained by the Sunkist Growers to develop new growing methods, to improve manufacturing processes, and to perfect better products. Today, with a backlog of more than 60 years experience, Sunkist has accounted for 118 separate U.S. patents.

Just three of many Exchange products are *Exchange Preserver's Pectin*—guarantees a more uniform finished product; *Exchange Low Methoxyl Pectin*—jells *without* sugar, tasteless, controls "weeping" in pies; *Exchange Lemon Juice*—brings out natural flavor of *any* food. Superior acidulant, excellent anti-oxidant.

Sunkist Growers

PRODUCTS DEPARTMENT • ONTARIO, CALIFORNIA

Distributors for

Exchange Lemon Products Co., Corona, Calif. • Exchange Orange Products Co., Ontario, Calif.

able supplies were expected to be still lighter during the following six weeks, until newly planted crops come into production.

Canned Ades on March

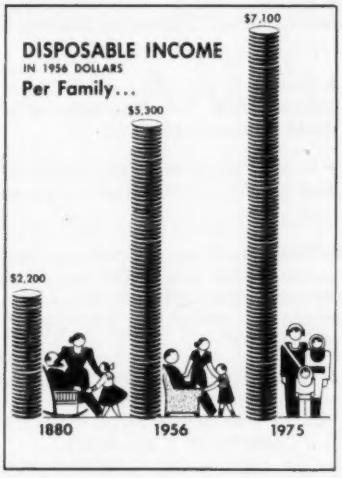
Non-carbonated ades or drinks in 46-oz. cans are taking up more and more space on the supermarket shelf. It is not unusual for them to occupy at least 15 running feet. That is a significant observation reported to FE by Hurty-Peck & Co., California flavor house.

These beverages appear to represent much more progress than the small cans of carbonated beverages. Many large food packing concerns are producing, distributing, and intensively promoting this type of product. Among them are California Packing Co., Libby, McNeill & Libby, Realemon Co., Stokely-Van Camp, Kraft Foods, Treesweet, Dole Pineapple Co. and Hi-C.

Fluid Skim Milk Gains

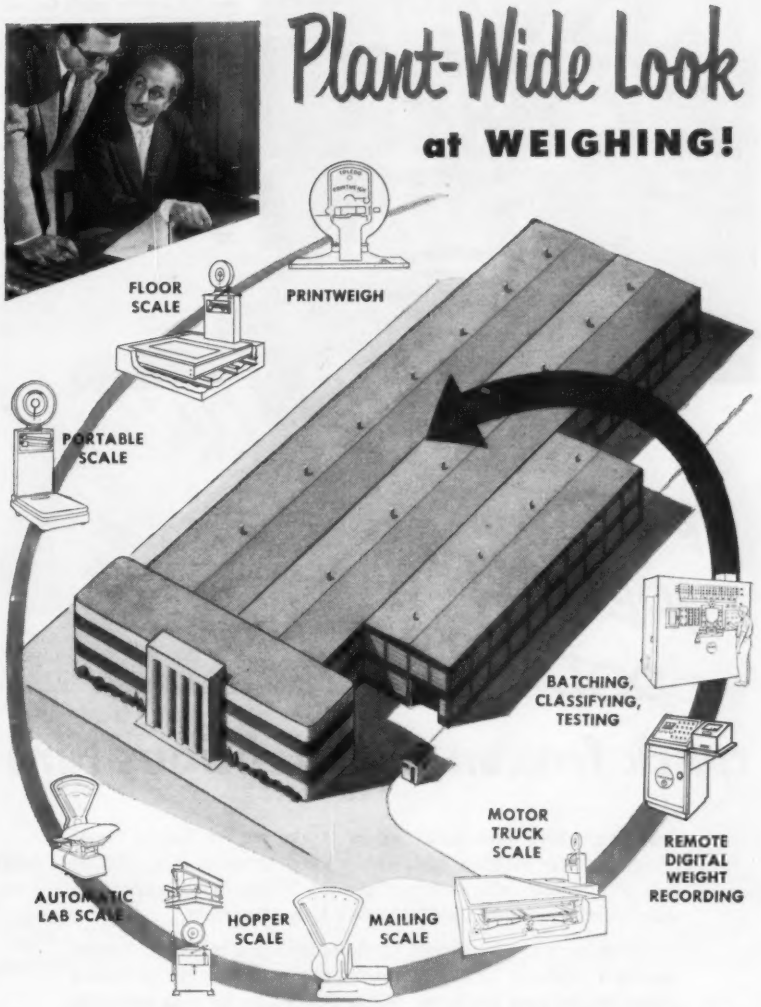
While fluid whole milk sales increased only 2.3% for the first seven months of 1957, fluid skim milk consumption rose 6% over the same period of '56.

In the past five years, one New England dairy enjoyed a boost of



BIG SALES TARGET for food manufacturers is $1,800 predicted increase in disposable income per family by 1975. By developing and effectively promoting new products, high quality, and convenience, the industry can rake in a larger proportion of a much bigger stack of chips. (Chart courtesy Committee for Economic Development)

Studying Costs? It pays to start with a



You can lessen the impact of rising costs by making sure your scales are doing the best possible job. Remember that weighing today is not a job for isolated scales—it's a vital element in your overall cost control system.

Weight records directly affect costs, quality, inventory control and customer billing. Weighing errors, or inadequate weight data, can be avoided by having the right scales in the right places . . . all carefully integrated in a plant-wide weighing system to supply basic records on materials received, shipped or transferred. Check your needs now! TOLEDO SCALE, Div. of Toledo Scale Corp., 1404 Telegraph Road, Toledo 13, Ohio.

TOLEDO SCALE *Headquarters for Weighing Systems*

DIVISION OF TOLEDO SCALE CORPORATION

☐ **NEW TOLEDO WEIGHT FACT KIT** will help you determine how well your scales measure up as a weighing system—help you detect weighing losses that drain profits. Request your kit now. No obligation.

☐ Industrial Scale Line ☐ Electronic Load Cell Scales ☐ Motor Truck Scales ☐ Electronic Remote Digital Weights

☑ WE'LL BE GLAD TO MAIL THE LITERATURE YOU CHECK.

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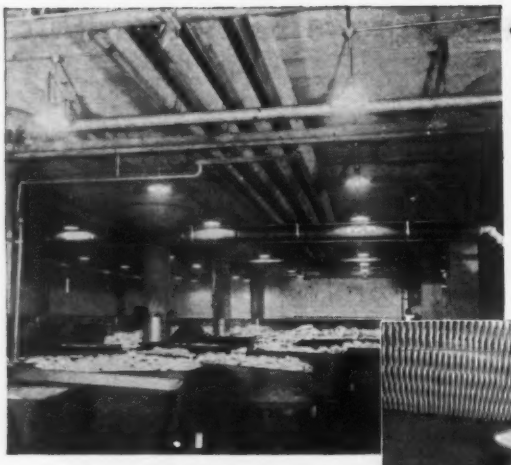
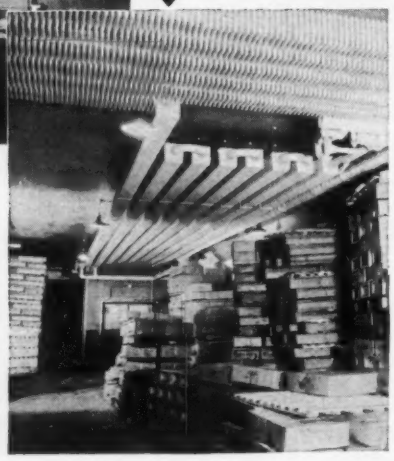


For the meat curing room at the Wilson plant, Vilter Zer-O-Disc coils were selected to produce the desired room conditions. Because of the high latent heat load, a 1" fin spacing was used to accommodate greater frost accumulation without impairing air circulation.

At the new Wilson & Co. meat packing facility at Albert Lea, Minnesota, the holding freezer, maintained at −10° F., uses Zer-O-Disc fin coils arranged on the ceiling. They are supplied with liquid ammonia at −45° F. The frosted condition of the coils attests to the uniformity of the refrigerant supply.



PORK SPECIALTY PRODUCTS

quick frozen to a delicious turn

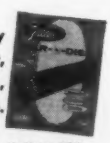
Succulent hams, firm pork, tender steaks require careful "cold processing" for satisfied customers. Vilter provides this exacting care with custom refrigeration at the new Wilson & Co. addition to their meat packing facility, at Albert Lea, Minnesota.

Included in the equipment furnished by Vilter is a Blast Freezer having a capacity of 60,000 lbs. of product per day, consisting principally of pork products. Vilter Zer-O-Disc fin coils were also selected for the still-air sharp freezer to handle products that cannot stand rapid air circulation without shrinkage or freezer burn, and for the holding freezer and meat curing rooms. Vilter accumulators and ammonia pumps were also supplied.

Through the years Vilter has supplied much of the refrigeration for Wilson's Albert Lea Plant. Included among this equipment are horizontal compressors of 150 and 300-ton capacities and a 150-ton briquette Pakice plant. Pakice in crystalform is also used in their sausage making operation. All equipment has performed smoothly with a minimum of maintenance.

It will pay you to let Vilter help you with your refrigeration problems.

Write to The Vilter Manufacturing Company Dept. E-706, 2217 S. First Street, Milwaukee 7, Wisconsin, for helpful literature.



Bulletin 518 Vilter ZER-O-DISC Finned Cooling Coils

Vilter®

REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, Milwaukee 7, Wisconsin

Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water & Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice & Polarflake Ice Machines

Trends & Forecasts

50% in sales of skimmed milk products compared to a 25% gain for regular milk. A California dairy's skim milk business zoomed 150 to 200%, while its whole milk sales rose only 5 to 6%. And a nationally operating dairy's sales of skim milk have jumped 33%.

In line with skim milk popularity, demand for cream was down 5.7% in the first seven months of '57.

HORS D'OEUVRES

▶ **Kroger in Cleveland is packaging one large and one small steak together. The large is labeled "His", the small, "Hers." Is this portion, or figure, control?**

▶ **A Marilyn Monroe doctrine on creating a "Corporate Image" was espoused at the recent brewers' convention: Pick a strong feature and promote it over and over again with deliberate single-mindedness.—You start with a picture calendar, no doubt.**

▶ Americans now eat 24% of their beef as hamburger, more than ever before. Not surprising. It takes the work out of eating.

▶ **Stretchable paper bags are available to grocers. Good. But elastic paper dollars would be more to the point.**

▶ Build a better mousetrap today, and what have you got? Advanced automation!

▶ **Hundreds of top executive positions remain unfilled because the right people cannot be found, NICB reports. If these jobs can go unfilled, how come they are so important?**

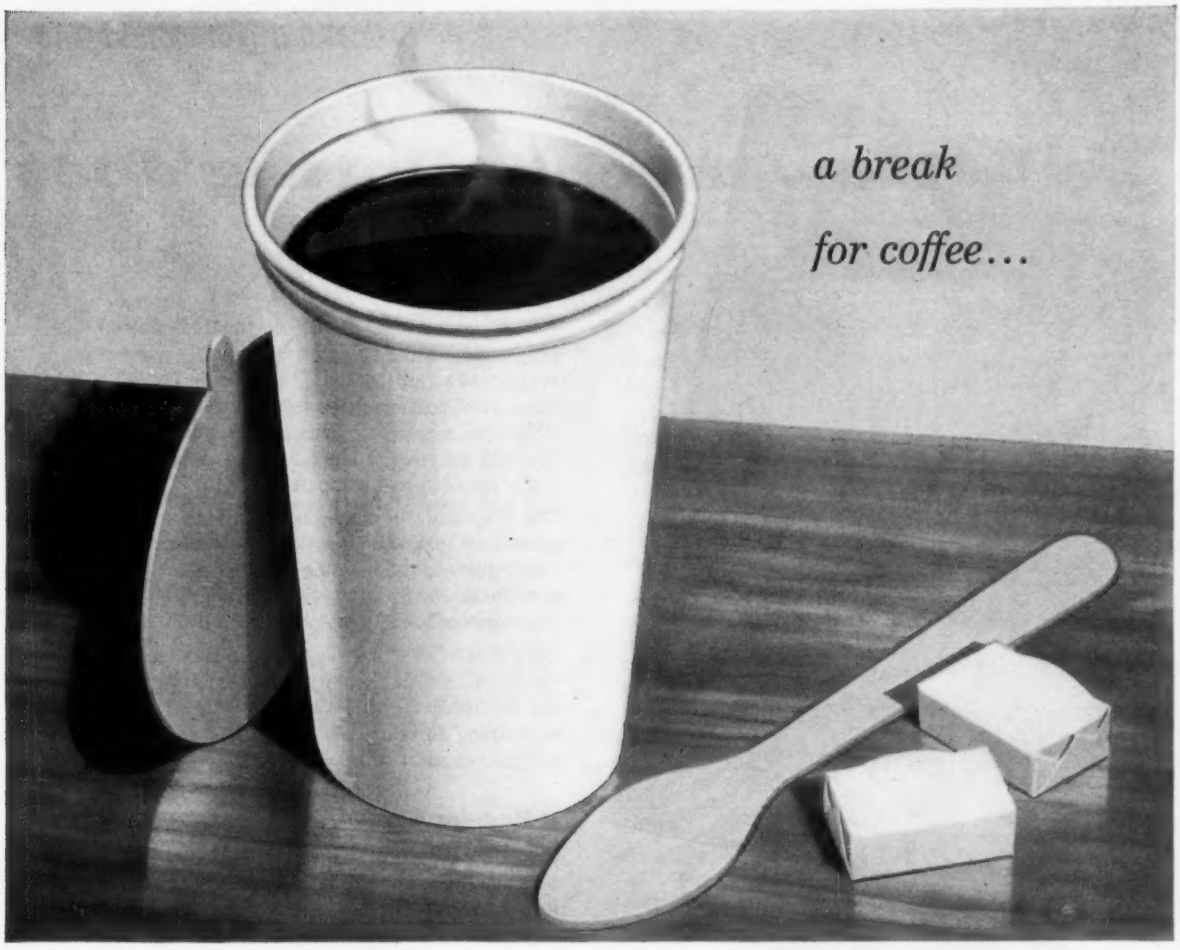
▶ Sugar production is booming in Brazil, and the country is swimming in sugar cane alcohol. Getting rid of the alcohol is a headache—as it so often is.

▶ **College grads spend a considerably larger portion of their incomes for alcoholic beverages than do consumers with less formal education. Scholarships should be a good investment for brewers and vintners.**

▶ Many executives wish they had learned more about human relations when they were in school. Serves them right for being bookworms.

← For more data, circle this page number on card at back

ARABOL SPECIFICATION ADHESIVES



FLAVOR PROTECTION

Where flavor and safety are vital, you can be sure a specification adhesive is at work. Here, in this type of container, the adhesive must do its job under conditions of heat and moisture—protecting the flavor of the coffee at the same time.

Adhesives can be and *are* specification-formulated for this and dozens of other requirements. We invite the opportunity to submit formulated samples—for tests to be made in your own plant—under your own particular working conditions. That is the one kind of testing that assures you of satisfactory results.

Our fourteen plants and warehouses—plus four laboratories—are your guarantee of service and delivery. It is our privilege to serve the leaders, as well as hundreds of small users. May we send you a helpful booklet listing 23 basic specifications for adhesives? Kindly address your inquiry to Department 89.

ARABOL

73 YEARS OF PIONEERING IN THE MAKING OF ADHESIVES

THE **ARABOL** MFG. CO.... *a nationwide organization serving major users of industrial adhesives*
EXECUTIVE OFFICES: 110 East 42nd Street, New York 17, N. Y. CHICAGO • SAN FRANCISCO • LOS ANGELES • ST. LOUIS • ATLANTA • PHILADELPHIA
BOSTON • PORTLAND, Ore. • ITASCA and McALLEN, Tex. • CINCINNATI • DENVER • TAMPA • LONDON, Eng.

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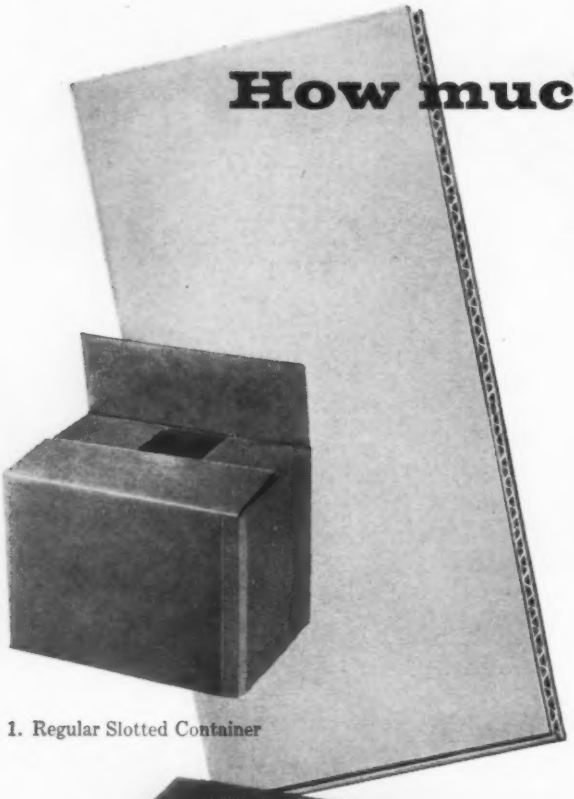
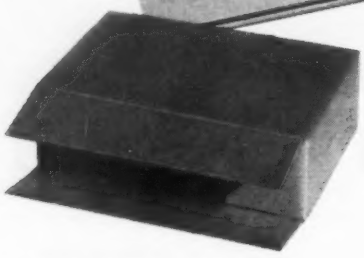
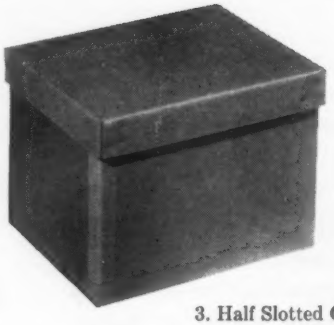
How much tailoring does



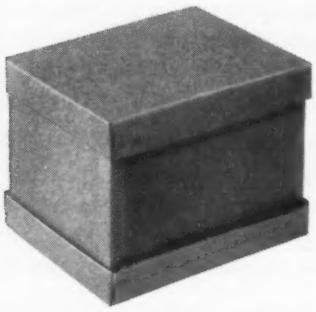
1. Regular Slotted Container



2. Special Flap Slotted Container



3. Half Slotted Container



4. Double Cover Box

Picking the proper corrugated shipping carton is like buying a suit. Rarely will a ready-made, "off-the-shelf" unit fit perfectly. Some modifications usually are needed; possibly even a complete custom-built job. It all depends on your product and how it is normally handled and shipped.

You may find, for example, among the representative basic box types shown here one that's just right for you. Or perhaps further structural design work would enable you to ship more efficiently and economically.

Talk it over with your local Union Box representative. He's an expert at pin-pointing all the pertinent factors. And at recommending or helping develop the most practical box for your needs.

1. Regular Slotted Container

Probably the most popular type used today. Fits all standard automatic packing and sealing units. All flaps the same length; outer flaps meet in center. Single- or double-wall construction is used, depending on degree of

about types of Union Boxes

your shipping container need?

protection your product needs.

Similar to the "Regular Slotted" is the "Center Special Slotted Container". Top and bottom areas are stronger; both inner and outer flaps meet at box center.

2. Special Flap Slotted Container

There are two kinds of "Special Flap" boxes. In one, the top and bottom flaps partially overlap. In the other (shown left) they overlap completely, providing double thickness at top and bottom. When strapped shut, flaps override each other, form snug, non-butting closure. If glued, adhesive covers full flap, assures extra safe, durable bond.

3. Half Slotted Container

Bottom is similar to Regular Slotted Container. Flanged cover is sent as a blank for set-up by shipper. Good as combination shipping shelf package. Without cover, used for batteries, other heavy, small items. Also, as a transfer file or stock box.

4. Double Cover Box

Ship heavy items where strapping is necessary? This three-piece box with telescoping covers might be just the ticket. Excellent stacking strength; strong covers take rough handling. Often used in large sizes for bulk packs on pallets.

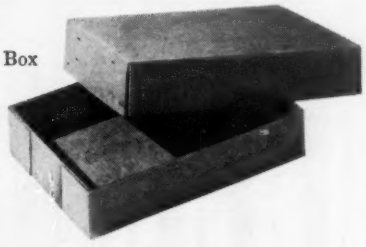
5. Telescope Box

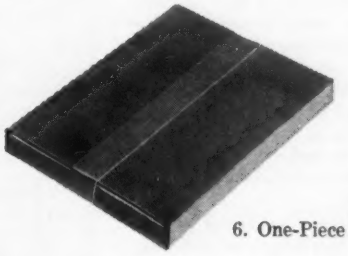
You'll probably need a box like this if you ship flat items such as paper, books, advertising material, etc. It protects with a double build-up of sheet around sidewalls and corners which also gives you maximum stacking strength. May be constructed as a full telescope (see below) or as a partial telescope.

6. One-Piece Folder

Another excellent shipper for books, catalogs, etc. Packs and closes quickly and easily. Mostly used for parcel post and express shipments. Also made up as "One-Piece Special Folder" where all flaps meet in center.

5. Telescope Box





6. One-Piece Folder

Write for new, informative booklet, "Types of Corrugated Boxes."

union camp

UNION BOXES

UNION BAG-CAMP PAPER Corporation

233 BROADWAY, NEW YORK 7, N. Y.

Factories: *Savannah, Ga., Trenton, N. J., Chicago, Ill., Lakeland, Fla.*

Sales Offices: *Eastern Division—144 E. State Street, Trenton, N. J.*
Southern Division—P.O. Box 570, Savannah, Ga.; P.O. Box 454, Lakeland, Fla.
Western Division—4545 W. Palmer, Chicago, Ill.

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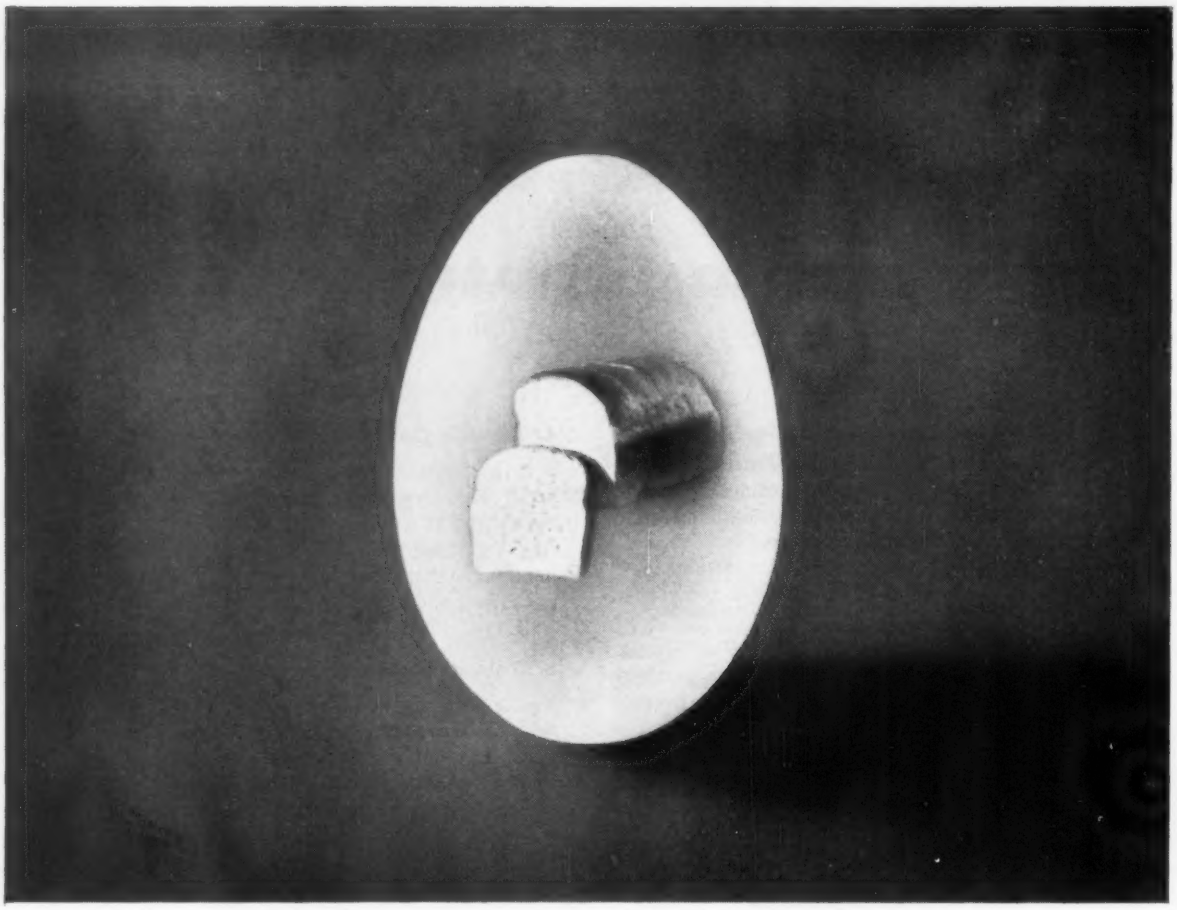


How Pfizer L-lysine can give cereal protein in your products a higher nutritional value... comparable to efficient egg protein

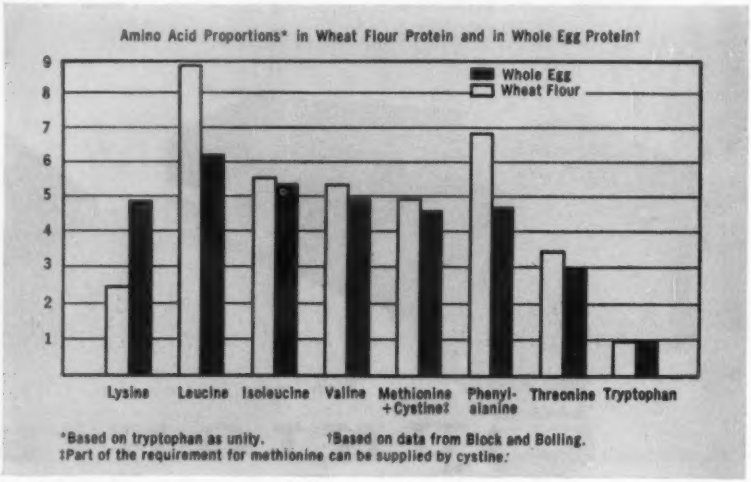
● The proteins of meat, eggs, fish and milk have high nutritional value because they contain a good balance of essential amino acids...a balance resembling that required by the body tissues. Cereal proteins, on the other hand, are unbalanced in terms of essential amino acids. The most deficient amino acid in cereal proteins is lysine.

The lysine content of wheat flour protein, for example, needs to be approximately doubled in order to make its amino acid balance comparable to that of efficient, high quality egg protein.

This lysine deficiency in cereal protein reduces the total nutritional effectiveness of products such as bread, flour and breakfast cereals. Protein is, in effect, being wasted. But now food manufacturers can correct this...can offer the public cereal products with higher nutritional value by adding PFIZER L-LYSINE.

Now is the time to experiment with PFIZER L-LYSINE* in your specialty breads, breakfast cereals, infant foods, etc. A unique Pfizer fermentation process assures that only the biologically active L-isomer lysine is produced. Write today for a free sample and technical data.

*Before adding L-lysine to food products, manufacturers should check Federal and State standards of identity.



Pfizer Quality Ingredients for the Food Industry for Over a Century

CHAS. PFIZER & CO., INC. Chemical Sales Division 630 Flushing Ave., Brooklyn 6, N. Y.
Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.; Dallas, Tex.

DEVELOPMENTS TO WATCH

SPECIAL
FOOD
ENGINEERING
SERVICE to
EXECUTIVES

Chlorella algae can be produced in space to feed moon travelers, and at the same time provide oxygen for them to breath, says Austrian scientist. Algae would feed on CO_2 of travelers' breath and make O_2 and food.

Direct steam-injection processing is teamed with aseptic canning and vacuum evaporation by Libby to produce top-quality concentrated pear, peach, and apricot purees. There is no thermal off-flavor on reconstitution.

Surplus whole fresh milk will be sterilized by Uperization HTST process (FE, Jan., '58) and aseptically filled into No. 10 cans by an Eastern dairy. It will be exported to Puerto Rico and sold to armed forces.

Look for aseptic canning to gain momentum. There are 40 installations, and half are in commercial operation. Milk products, purees, paste, and juice are processed. Capacity of equipment will be increased.

European brewers are excited about advantages of aseptically filling hot pasteurized beer directly into hot bottles. Physical stability and keeping quality are improved, spray pasteurization is eliminated.

Brewers here are watching development of bulk transportation of beer in tank trucks. Could solve freight-cost problem of long-haul breweries.

Proved effective as a fungistat, sorbic acid reduces cucumber bloating and controls surface scum-growth when used in very low concentrations in brine. In fruit and vegetable waxes, it helps control spoilage.

What happens during chemical reactions catalyzed by ionizing radiation will be studied at Argonne National Lab. with an ARC linear electron accelerator. Knowledge may be useful in furthering food radiation.

AEC claims that irradiation of foods may ultimately save $100 million a year for military in food refrigeration and transportation charges.

Safeway will use medium-size electronic digital computer with punch-card and magnetic-tape equipment in sales analysis, inventory, and order control. This is step in "automation" of chain-store merchandising.

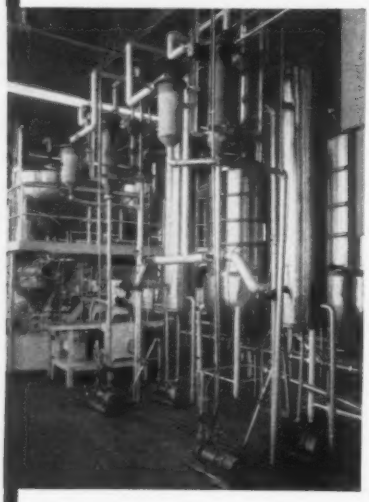
A "low-cost" desk-type electronic computer with standard keyboard actuation has been developed by Clary Corp. The $15,000 unit can be used like a super-speed mechanical calculator when not busy as computer.

Washington
Report
p. 25

New inexpensive clear linear polyethylene film has wide temperature range, is greaseproof, and protects against moisture transfer and greases. Can be tear-strip opened and will compete with cellophane as overwrap.

More baby foods will be multi-packed to promote sales and simplify in-store handling. More small multi-packing machines will appear.

Sexton
(INDIANAPOLIS, INDIANA PLANT)
makes finest jams, jellies, fruit spreads with
Mojonnier
FRUIT SPREAD COOKERS



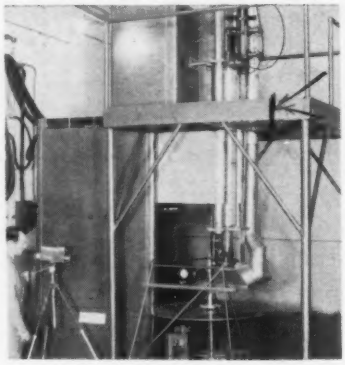
- Vacuum cooking speeds processing time through higher heat transfer rates, with all of product uniformly heated.
- Low vacuum boiling point (134°F.) guards natural fruit flavor and color — eliminates carmelization and burned flavor.
- Processing batches up to 4,700 lbs. means less handling of materials, greater production output and lower labor costs.
- All controls centralized for quick accessibility.
- Stainless steel, coil-free interior is easy to clean.
- One 42" Fruit Spread Cooker equals production of *four 100 gallon open kettles.*

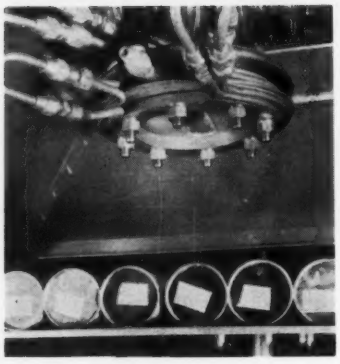
Write today for full information.
MOJONNIER BROS. CO.
4601 W. Ohio St., Chicago 44, Illinois

QUALITY Mojonnier YOU CAN TRUST

STAINLESS STEEL
FRUIT SPREAD COOKERS

Developments to Watch





They'll Radiate Your Foods On Hour or Day Contract

"Rented irradiation" of top energy and capacity—for your own research into ray preservation of foods, or even small-scale commercial processing—is made available with this new 8 million volt linear accelerator (overall view above, under-hood closeup at right).

Installed at Midwest Irradiation Center, just opened at Rockford, Ill., by W. F. & John Barnes Co., and Applied Radiation Corp., the unit is an Arco Mark I that emits, as desired, high energy electrons, X-rays, or neutrons. Rentals may run from an hour ($100) up to several days per month.

Note (photo) how remote observations of action are enabled by TV eye. It's trained on rotating table that carries food products under ray port. Latter is hidden beneath hood, which removes ozone.

Under-hood view shows details of ray port and (below it) experimental cans of foods moving through the treating range. A conveyor may be substituted for the rotating table.

Ship-Tow Liquid Foods?

Giant plastic cargo bags towed behind ships under water are projected by Matson Navigation Co. as a new means of delivering such products as liquid sugar.

Freight savings are thus seen, since this radical method "could add cargo space whenever needed."

Matson's goal is a bag that's streamlined to cut drag to a minimum. Through a ballast system, it would be lowered at sea, then raised on approach to shallow waters.

As for bag size, relative economies of units in the 1,000 to 15,000-ton cargo range are being weighed. Prime step, meanwhile, is choice of a suitable plastic for the bag.

New, Safe, Effective Sterilizers

Unusually penetrative sterilants that are both safe and effective for use on materials that are too sensitive to take steam, dry heat, and liquid chemical treatments, have been developed by USDA, Beltsville, Md., working under Army contract.

Already released for commercial manufacture, the formulations employ ethylene oxide in combination with propellant-type chemicals such as used in insecticide aerosols (dichlorodifluoromethane and trichlorofluoromethane). The combinations make the commonly hazardous ethylene oxide non-flammable.

Army chemical corps has worked out a number of applications, including emergency sterilization of packaged foods in trucks.

What Price Bananas?

Consent decree reached recently in the Government's antitrust suit against United Fruit Co. provokes a check of banana prices against the trend of overall food prices.

Charge was that monopoly permitted the company to fix U. S. price of bananas, and settlement requires UFC to release holdings in order to set up a competing firm.

Whereas average food prices ranged from an index of 95.9 in 1947 to 116.4 in 1957, the average price per pound of bananas, according to BLS listings, has varied only 1.4¢ between 1948 (15.9¢) and 1957 (17.3¢).

• REPLACING OF MAN with machine has been upheld by arbitrator in a Schlitz labor dispute. Here, conveyor switchman had been dropped and auto-controls put in.

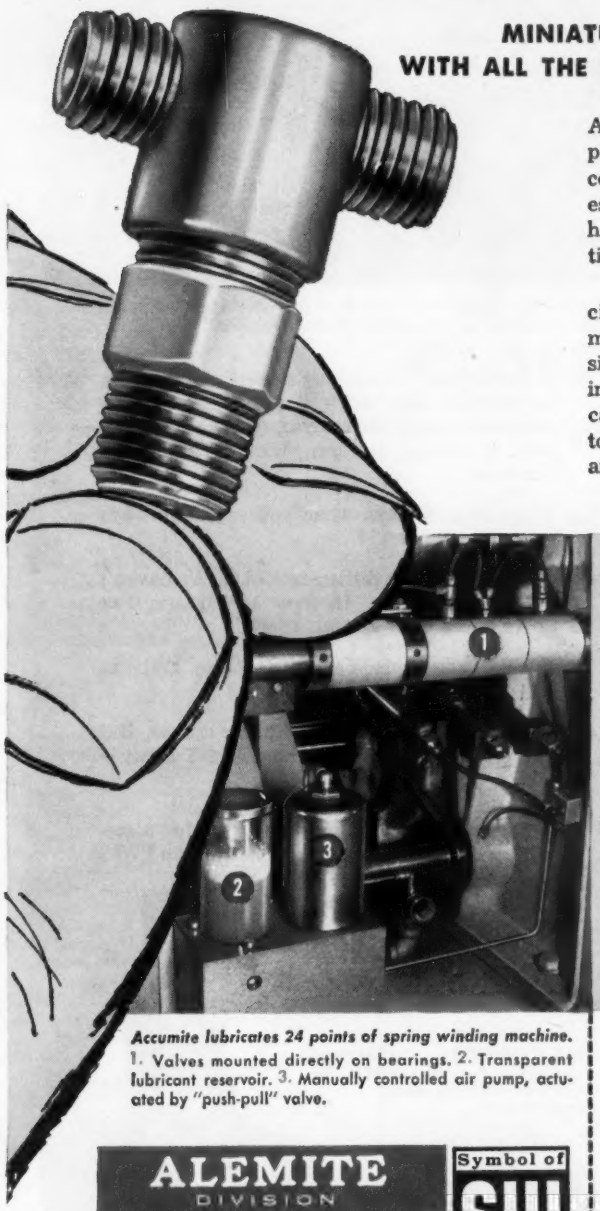
NOW! Any Machine Can Have The Advantages of Centralized Lubrication... At Low Cost!

Alemite "MINIATURE" ACCUMITE System

MINIATURE SIZE FOR LIMITED SPACE—
WITH ALL THE QUALITY OF HIGHER-PRICED SYSTEMS!

Alemite—with 40 years of centralized lubrication experience—announces an all-new miniature system complete with pump, metering valves and controls—especially designed to service many machines and vehicles where centralized lubrication has been impractical until now!

Alemite's new midget-size Accumite system is especially adaptable to light, precision, multiple-bearing machines that have limited installation space. Its small size and simple installation overcomes cost limitations in most plants. Typical applications are: packaging, canning, labeling and textile machines . . . and machine tools. It is also suitable for tractor trailers, lift trucks and farm implements.



Accumite lubricates 24 points of spring winding machine. 1. Valves mounted directly on bearings. 2. Transparent lubricant reservoir. 3. Manually controlled air pump, actuated by "push-pull" valve.

ACCURATELY METERS THESE SHOTS OF OIL OR GREASE

.003 cu. in. .006 cu. in. .009 cu. in.

ALL THE ADVANTAGES OF "BUILT-IN" MEASURED LUBRICATION—PLUS MIDGET SIZE!

- Meters exact amounts of refinery-clean lubricants to all bearings whenever system is operated.
- Eliminates shutdown time for lubrication.
- Seals lubricant against dirt, grit and water.
- Prevents bearing troubles due to neglect or use of wrong lubricants.
- Services all bearings in one operation.
- Avoids work spoilage and bearing repairs due to overlubrication.

Mail coupon for full information!

ALEMITE
DIVISION
STEWART-WARNER
CORPORATION

Symbol of SW Excellence

1850 Diversey Parkway, Chicago 14, Ill.

ALEMITE, Dept. S-38
1850 Diversey Parkway, Chicago 14, Ill.

Please send me all the facts about your new "Miniature" Accumite system.

Name_____

Company_____

Address_____

City_____ Zone____ State_____

For more data, circle this page number on card at back ➔

"they step up our production — and never let us down"

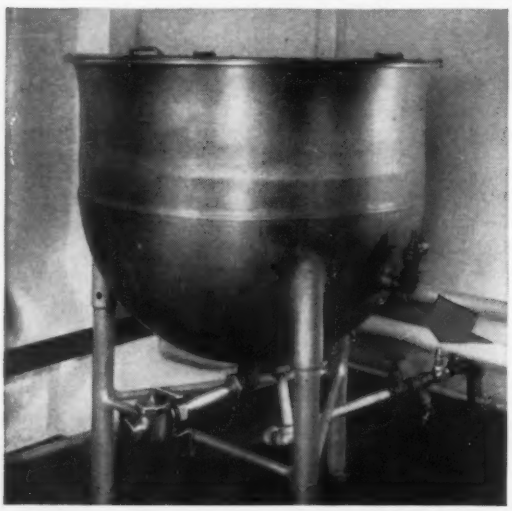
"Yarways bring our kettles to a boil in about 3 minutes instead of the 20 minutes previously required."

Q. Mr. DeJulio, you use a lot of Yarway Impulse Steam Traps here in the FrigiDinner, Inc. plant. How did you first come to use them?

A. I saw an advertisement in a magazine offering a free 90-day trial, and since we had been having plenty of trap trouble, I sent for one. Within two weeks I knew it was our answer. We've purchased only Yarways since then.

Q. Briefly, what's been your experience with Yarway traps?

A. To sum it up, they step up our production, and they never let us down. Our production schedule of pre-cooked frozen dinners is pretty stiff, and time is important. In one case, Yarways cut 17 minutes off the cooking time of every batch. In another, they made it possible for us to double our production of Swiss steaks. Performance is always uniform. We can count on Yarways.



Q. What do you mean when you say, "Yarways never let us down"?

A. Maintenance—or rather, lack of it. We haven't had any troubles. In over two years, I've never had a Yarway trap apart.

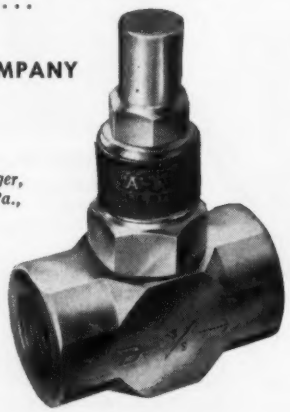
Q. Do you have only Yarway Impulse Traps in the plant?

A. No, there are still a few of other makes. But every new trap installed now is a Yarway—soon we'll be 100% !

If you want a Yarway Impulse Trap for a free 90-day trial—or our free book, "The How and Why of Steam Trapping", write . . .

YARNALL-WARING COMPANY
127 Mermaid Ave.,
Philadelphia 18, Pa.

• MIKE DE JULIO, Plant Manager, FrigiDinner, Inc., Philadelphia, Pa., manufacturers of pre-cooked frozen dinners.



YARWAY impulse ...a good way to specify steam traps

OVER 1,200,000 YARWAY IMPULSE STEAM TRAPS ALREADY USED • STOCKED AND SOLD BY 275 CONVENIENT LOCAL INDUSTRIAL DISTRIBUTORS • NATION-WIDE YARWAY ENGINEERING STAFF AVAILABLE FOR SERVICE.

Developments to Watch

Gets Closeup of Additive Testing

As hearings loomed on bills to regulate use of additives, members of House's Health & Science Subcommittee visited Food & Drugs Research Laboratories, Inc., N.Y.C. Aim was to get focus on safety testing of the food agents. Here, Subcommittee Chairman John Williams (left) is intent as Dr. Bernard Oser, FDRL president, demonstrates an additive evaluation. Committeemen saw further procedures at General Food's Tarrytown, N. Y., lab.

Schedule of Events

March

17-21—International Atomic Exposition, International Amphitheatre, Chicago.
19-20—American Dairy Assn., annual meeting; Congress Hotel, Chicago.
25-28—Packaging Machinery Mfrs. Institute, annual exposition; Convention Hall, Atlantic City.

April

7-11—American Assn. of Cereal Chemists, annual meeting; Netherland Hilton Hotel, Cincinnati.
10-11—Dairy Industries Supply Assn., annual meeting; Edgewater Beach Hotel, Chicago.
15-17—American Welding Society, annual exhibit; Kiel Auditorium, St. Louis.
17-18—American Dry Milk Institute, annual meeting; Edgewater Beach Hotel, Chicago.
19-22—National Independent Meat Packers Assn., annual meeting; Palmer House, Chicago.
20-23—National Fisheries Institute, annual meeting; Sheraton-Palace Hotel, San Francisco.
20-23—Grocery Distribution Exposition; Kiel Auditorium, St. Louis.
21-23—American Oil Chemists' Society, annual spring meeting; Peabody Hotel, Memphis, Tenn.
22-24—Food & Container Institute, Research & Development Assn., annual meeting; Palmer House, Chicago.
23-25—Pennsylvania Mfg. Confectioners' Assn., annual production conference; Franklin & Marshall College, Lancaster, Pa.
23-27—Festival of Foods; Coliseum, New York City.

Yes!
GLOBE hycar® BELTING
IS NOW AVAILABLE

GLOBE HYCAR BELTING gives you all the benefits you ever expected for food conveying, PLUS many new features. It resists those animal fats, vegetable oils and greases that deteriorate natural rubber and Neoprene.

IT STAYS pliable at below zero temperatures, maintains stability at 250°F above zero—and resists cracking after long service.

GLOBE HYCAR BELTING is odorless, tasteless, non-toxic, non-porous and non-contaminating. It is easy to clean and keep sanitary. In cut widths up to 48 inches.

WHITE HYCAR, for conveying, in 2 to 5 plies inclusive.

GREEN HYCAR, for picking and sorting tables, in 3 ply only.

MANUFACTURERS OF:

WHITE SOLID WOVEN COTTON BELTING • PRESS-CURED KANRY-TEX BELTING WATERPROOF AND WAX TREATED BELTING • HYCAR BELTING • NEOPRENE BELTING • PLASCELL BELTING • CELLULOSE BELTING • STITCHED CANVAS BELTING • ROUND BRAIDED ENDLESS BELTS • HEVALOID ENDLESS BELTS WOVEN ENDLESS BELTS • CLEANER AND SIFTER BRUSHES • WEBBINGS HOISTING SLINGS • BELT DRESSING

®Hycar American Rubber — T. M. The B. F. Goodrich Co.

GLOBE WOVEN BELTING CO., INC.
1400 CLINTON STREET • BUFFALO 6, NEW YORK
KNOWN FOR QUALITY THE WORLD OVER

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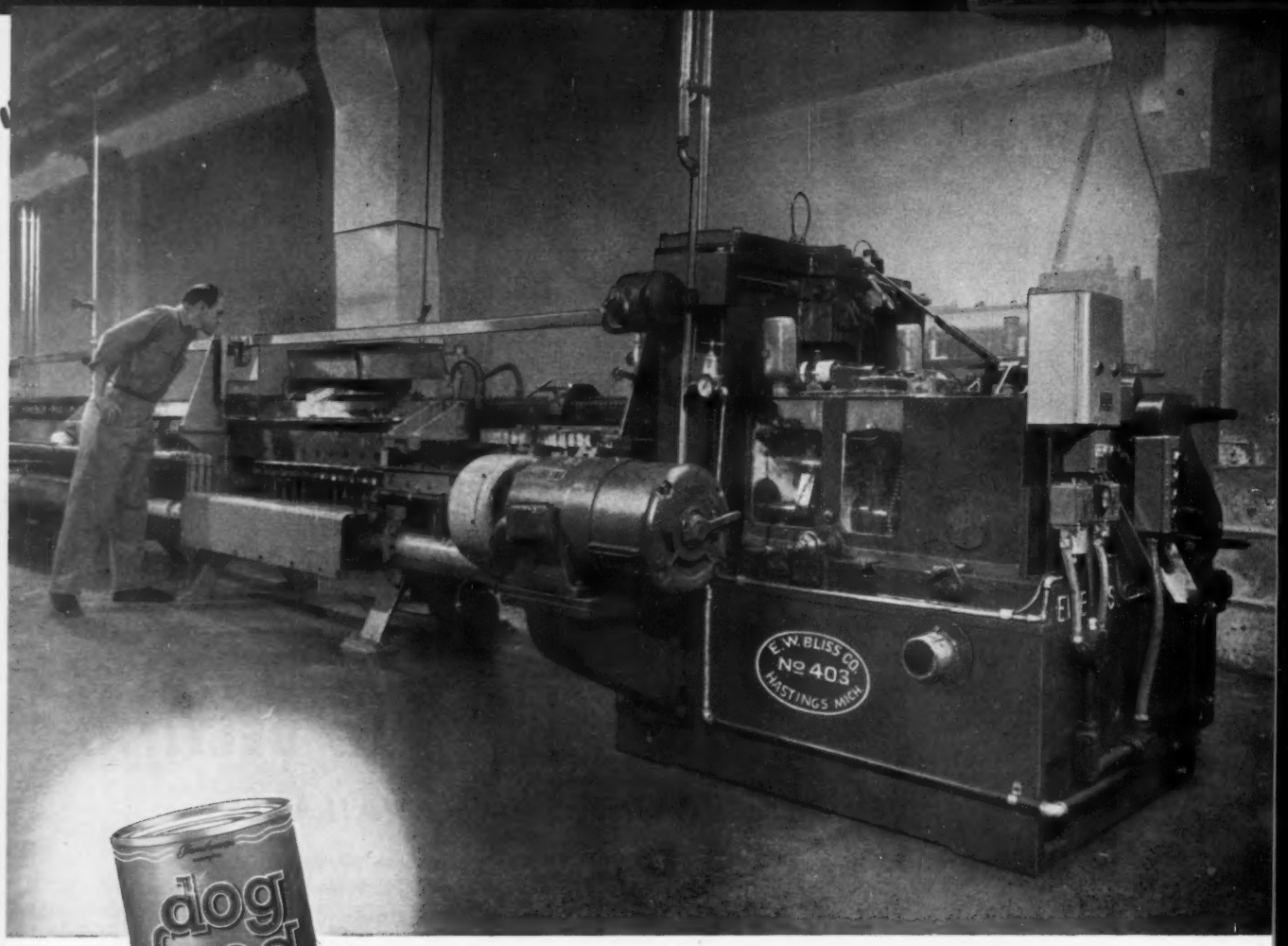


DOGFOOD... *with a touch of* BLISS

To make more pet food cans, Consolidated Can Company of Whittier, California, an EKCO Products subsidiary, installed a complete Bliss automatic can making line in 1956. Within months, the first all-Bliss line had proved so successful that they installed a *second.*

One of the key machines in the line is the bodymaker above . . . a machine capable of turning out approximately 450 can bodies per minute!

Could you use production like this in your can making line? Bliss equipment can help you. Whether you need a single machine or a completely built and equipped "turn-key" plant, get complete details from Bliss.

BLISS
SINCE 1857

E. W. BLISS COMPANY · Canton, Ohio

BLISS is more than a name . . . it's a guarantee

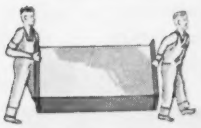
PRESSES • ROLLING MILLS • MILL ROLLS • DIE SETS • CAN MACHINERY • CONTRACT MFG.

Assembly is simple

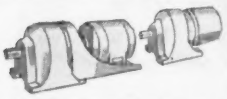
with bucket elevators LINK-BELT-built from head to boot

CHAINS, SPROCKETS, PULLEYS — a type and size to handle all kinds of material, satisfy any application requirement.

BEARINGS — We make all types — babbitted, bronze, ball and roller — to meet your specific service conditions.



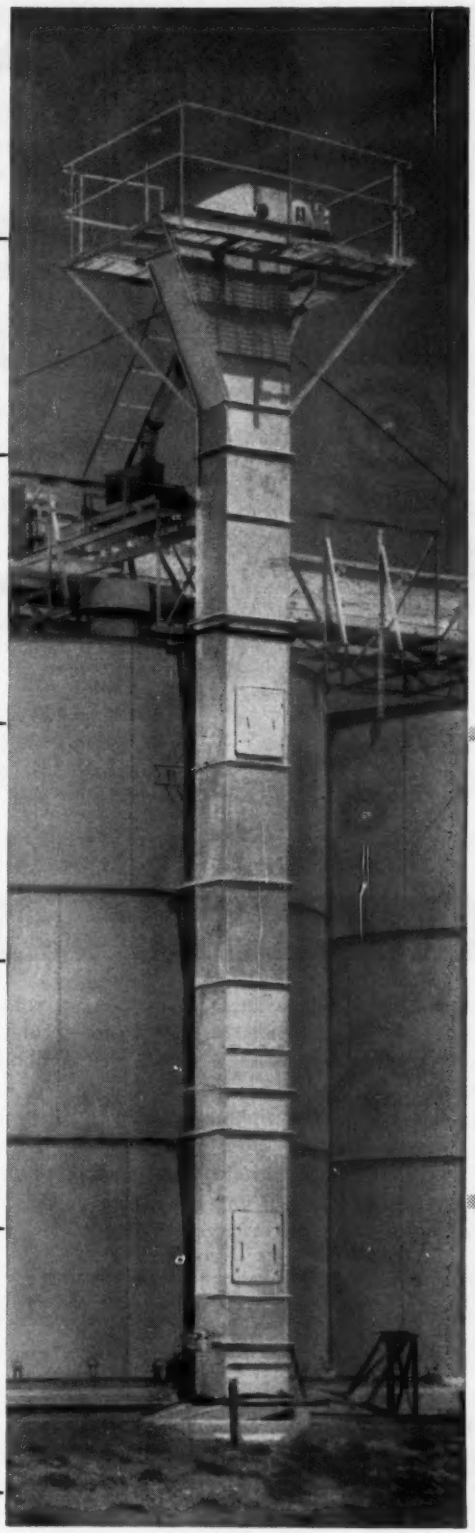
CASINGS—are furnished weather- or dust-tight. They are self-supporting —where conditions warrant, lateral tie-in can be supplied.



ENCLOSED GEAR DRIVES — Gearmotors, Motogears, Worm Gear Drives — in sizes and ratios to meet any requirement.

BUCKETS—All types and sizes suitable for handling a variety of materials are available from stock.

TAKEUPS—A type suitable for adjusting elevator chain or belt to proper tension — babbitted, bronze, ball and roller bearing types.



All components are designed and manufactured for quick installation, smooth performance

HERE's a point worth considering when you review prices on bucket elevators. Installation costs have a big effect on the total outlay. And your best bet for holding field erection costs to a minimum is by relying on Link-Belt.

Reasons are: first, Link-Belt *manufactures all bucket elevator components*—your assurance that designs are related. Secondly, it's easy to select the proper bucket elevator to meet your specific requirements from Link-Belt's complete line. And third, with each Link-Belt bucket elevator you get built-in alignment.

In addition, Link-Belt will erect your elevator and accept full installation responsibility. For more details and assistance in selecting a suitable bucket elevator for your operation, call your nearby Link-Belt office today. 14,718

Designed for maximum elevating efficiency...

◀ **LIGHT, FRIABLE OR SLUGGISH MATERIALS,** and those tending to stick to buckets are handled efficiently by positive discharge elevators.

FRAGILE MATERIAL— ▶ pellets, nuts, seeds, etc.—get gentle handling in internal discharge elevators offering high capacity. Double head shafts operate in fixed bearings.

LINK-BELT

BUCKET ELEVATORS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville (Sydney), N.S.W.; South Africa, Springs. Representatives Throughout the World.

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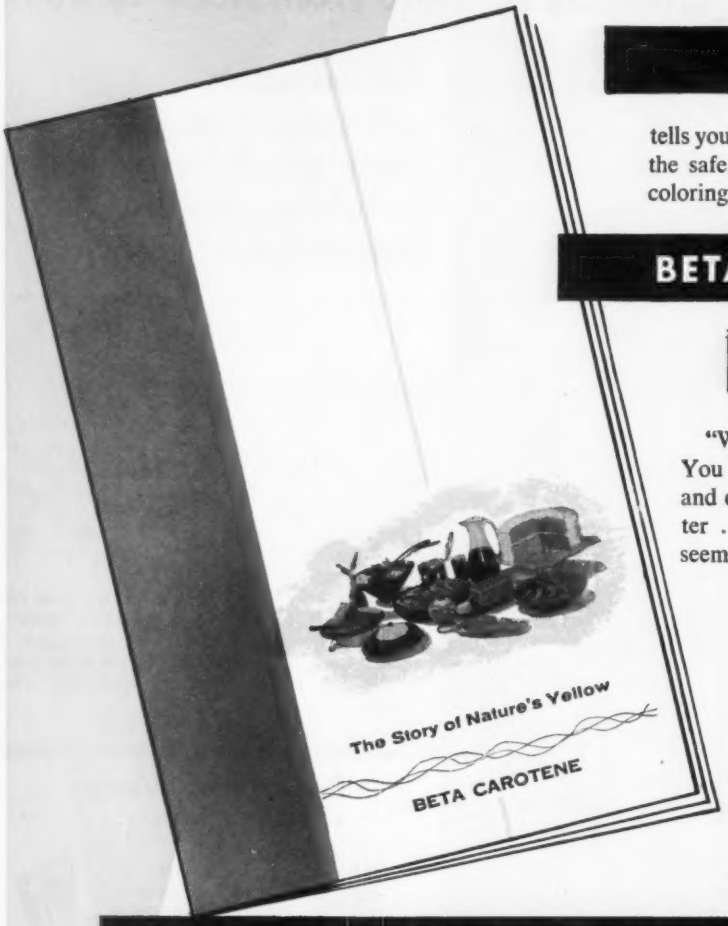
An Announcement of Major Importance In Food Coloring



NEW BOOK

tells you for the first time all about the safe, sure, yellow, pure food coloring with vitamin A value —

BETA CAROTENE

From beginning . . .

"Why Is Color So Important? You pick the big, colorful apple and every bite seems to taste better . . . The *best-looking* foods seem to be the *best-tasting.*"

To end . . .

"Color calls to your appetite — and beta carotene makes a compelling call to good things, good foods, good nutrition, and good living."

Get your copy of this Unique, New 20-page, 4-color book

FREE

This is a technically accurate, interesting, and informing book. It tells you why carotene is no stranger to us . . . the story of the carotenoid family and carotene's history . . . all about beta carotene's safety . . . how to use it most profitably in processing foods . . . why it has important vitamin A value . . . how man matches Nature to make carotene.

If you're concerned with the processing, preparation, marketing, advertising, or constant improvement of food, send today for your own copy. There's no charge, of course.

To: Vitamin Division
Dept. FE-3
Hoffmann-La Roche Inc.
Nutley 10, New Jersey

Please send me a copy of
"The Story of Nature's Yellow — Beta Carotene."

*Name*_____

*Address*_____

*City & Zone*_____ *State*_____

Send this coupon for YOUR FREE COPY of the new Carotene brochure

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House Tie-Up Derails Additive Hearings

The long-awaited resumption of hearings on food additive legislation came up to the wire in late February —only to be postponed indefinitely.

Rep. John Bell Williams, chairman of the House Interstate Commerce Committee's Health & Science Subcommittee, called off the sessions when the full committee's headline-making investigations into the Federal regulatory agencies began demanding all the members' time.

Williams indicated he'll re-schedule the additive hearings if and when the full committee rids itself of its regulatory-agency examination. But as this was written, there seemed no end in sight. If they do terminate, however, the additive hearings would be resumed before Congress goes home.

The postponement is a set-back greatly delaying final approval of a bill. Yet it does give more time to the industry to get together on currently-moot points.

Bright spot here was recent introduction of a new bill—H.R. 10404—further evidencing the intentions to win through with practical legislation, rather than an unwieldly complicated measure. The simple National Canners Assn. bill stands here as a pace-setter.

Pretesting and notification of FDA before commercialization of any new additive would be required, thereby providing added protection to consumers.

California Sues Washington Re Wines

Discrimination against California wines by the State of Washington is charged in the U. S. Supreme Court by California.

Sought is a restraint order on the neighbor state's alcoholic beverage laws, contention being that they're unconstitutional.

Complaints: (1) Washington monopolizes sale of California wines in its state liquor stores, while allowing Washington wines to be handled by privately owned establishments; (2) uses its controls to fix California wine prices at 'unreasonably high levels'; and (3) prohibits California wineries from promoting their wines by direct contact with Washington retail licensees.

California Attorney General Edmund Brown says the result has been a 25% decrease in sales of California wines in Washington.

Food Field Split on Trade Act Extension

Like manufacturers in many other fields, food people are divided on Ike's strong request for a 5-yr. extension of the Trade Agreements Act.

Actually, the White House call—to set a liberal U.S. foreign trade program against the Soviet challenge—is a compromise. It asks both tariff-raising and tariff-cutting authority. This is part of the Administration's 'moderation effort' to hold a protectionist-minded Congress in line.

Protectionists, large and small, are confident. They will try (1) to reduce Ike's tariff-cutting power, or shift it to Congress, and (2) to make it easier for domestic producers to get tariff and quota relief. Then, if these procedural amendments don't go through, they'll work to get specific commodity quotas written into law. Failing this, they say they have enough votes to defeat the bill itself.

Lining up with others who favor import restrictions are the tuna canners, who have a general import investigation pending with the Tariff Commission.

Meanwhile, freer-traders fear the procedural amendments the most. A number of packers, canners, and other processors, have a large stake in the rising export markets overseas, and they'll likely resist changes that might jeopardize sales in dollar-short markets abroad.

Survival-Food 'Shopping List'

A tentative list of survival items—foods and other key materials to stockpile against an atomic war—has been drafted by Office of Defense Mobilization.

Studies by pertinent Government agencies will now proceed in order to determine how many of the items are available in necessary quantities.

In finally approved version, the tabulation will become a new "shopping list" for Federal stockpiling.

BRIEFS

Milk pricing will next be microscoped by the Kefauver anti-monopoly team. Large dairy firms will be on the receiving end of the Senator's questions. Answers, however, will likely be clouded due to permeating role of Government controls.

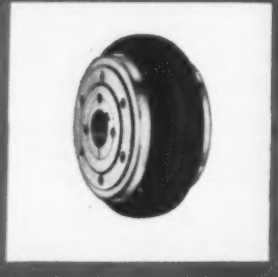
'Humane slaughter' standards are called for in Bill H.R. 8308 recently passed by House voice vote and sent to Senate. It would provide for USDA to draft requirements, which would become applicable next year in Government meat procurement.

Higher tax allowance when replacing machinery and equipment would put needed impetus behind capital goods. Such a plan is now being directed to lawmakers' ears in an effort to shorten the wide gap between original cost of machines (all that can now be written off taxwise) and present day lofty prices. But at this time, chances for its passage are only so-so.

Calls multiply for new industrial uses of various food materials. Latest is urging by USDA advisory committee of a boost in oilseeds-and-peanuts research.

Beefing up of Packers & Stockyards Act is signalled by Secretary Benson's establishment of a special section concerned with enforcement of Act's packer provisions. Named deputy director is Lee Sinclair, who has already headed P&S Branch for some years.

Up to 825 hp



NOW! THE COUPLING WITH THE 4-WAY FLEX!

DODGE Para-flex

FLEXIBLE CUSHION COUPLING

THE NEW IDEA IN FLEXIBLE COUPLINGS... WITH A FLEXING BODY THAT AUTOMATICALLY COMPENSATES FOR ALL COMBINATIONS OF MISALIGNMENT AND END FLOAT... AND CUSHIONS SHOCK LOADS!

THIS Coupling "swallows up" misalignment! Its ability to handle multiple displacement is exceeded only in a universal joint. It outperforms the most complex coupling mechanisms—yet it operates with the simplicity—*and the dependability*—of a modern tire!

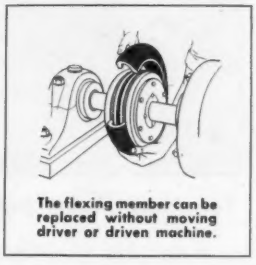
The technological advances that contribute to the miracle of today's truck tires, which are engineered to carry tremendous loads at high speeds and stand terrific shock, have made this new type of coupling possible.

The heart of Para-flex is a tire with synthetic tension members bonded together in rubber. It is pliant. It "fits itself" to changing shaft conditions—angular, parallel, end-float, *or any combination of all three!* Depending upon the size of coupling and duration of shaft misplacement, it handles angular misalignment up to 4°, parallel up to ⅛" and end-float up to 5/16".

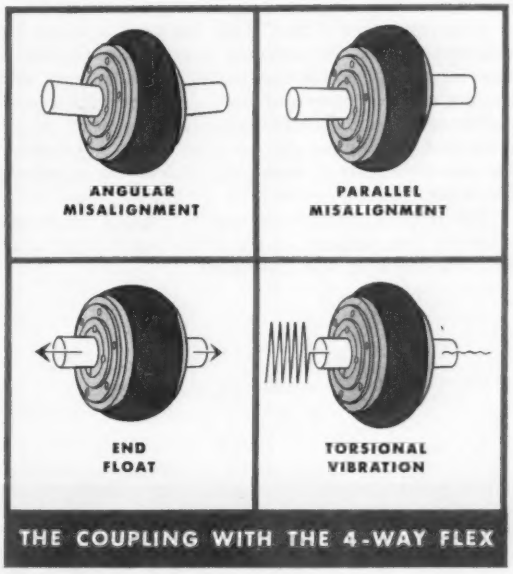
It cushions the stresses of shock loads to a remarkable degree. And it tends to absorb torsional vibration—reducing noise and protecting machinery from vibration's destructive forces.

There is no metal-to-metal contact between shafts. They are insulated. No lubrication is required.

Para-flex takes a minimum of space on the shaft. Mounting is simplified through the use of standard Taper-Lock bushings — no reboring, no machining. Safety is promoted by flush design; there are no protruding parts. And since the flexible member is molded with a transverse split, it can be replaced *without moving either the driver or driven machine!*



The flexing member can be replaced without moving driver or driven machine.



THE COUPLING WITH THE 4-WAY FLEX

Para-flex Couplings are stocked by Dodge Distributors in popular transmission sizes. They are available from factory stock in capacities up to 825 hp at 1200 rpm. Call your distributor for early delivery to *make your own test.* You'll witness something revolutionary!

DODGE MANUFACTURING CORPORATION, 2800 Union Street, Mishawaka, Indiana

DODGE

of Mishawaka, Ind.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods in the mechanical transmission of power. Look in the *white* pages of your telephone directory for "Dodge Transmissioneer." Or write us.

NEW PACKAGES & PRODUCTS

Revamped Wine Packaging Features "Class" Look

A sparkling new "class" look has been developed to accompany Petri Wine's new trade name—Crystal. A new formal and glamorous motif has added spot illustrations of gold grapes and leaves and a new logotype.

The new beaded bottle suggests cut crystal. A gold neck used allows a second "play-up" of the logotype and the new trademark—a wine glass design with grapes and the letter "P".

The shipping carton was also redesigned to complement the new package. A diamond-shaped panel carries the new logotype and trademark.

"Picture-Book" Design Sparks New Cereal Cartons

Mother Goose is brightening grocery shelves, courtesy of Beech-Nut Baby Foods new cereal packages. Colorful animated animal drawings are directed at catching the eye of the baby-carriage trade as well as the young mother.

The package size has been increased from 3½ to 8 oz. The popular oatmeal, corn, rice, and mixed cereals have been supplemented by the new Hi-Protein cereal.

The design change is in direct contrast to the accepted belief that pictures of healthy babies are the best drawing card in baby food packages.

Winners in Potato Chip Bag Contest

Pictured are the three top award winners in the 1958 National Glassine Potato Chip Bag Design Contest sponsored by the Glassine and Greaseproof Manufacurers Assn. and the National Potato Chip Institute.

First prize went to (left to right) Porter Potato Chip Co., Salt Lake City. Second honors were taken by Happy's Industries, Minneapolis. Third prize went to Crispie Potato Chip Co., Stockton, Calif.

The entries were judged on competitive sales-appeal at point of sale. Silver plaques were awarded to all of the winners.

Toppings Make Debut in Pressure Cans

A chocolate syrup and a cream topping are the latest food products to appear in pressure cans.

Sifers Chocolate Syrup Co. packs its Chocolate Flo'z in a lithographed 16-oz. can supplied by American Can Co. (28A)

Lever Brothers has joined the packaging trend with its Lucky Wip in a 16-oz. Spra-Tainer made by Crown Cork & Seal (28B). A shallow dome top and a white molded plastic cover which simulates a swirl of the product add sales appeal.

Circle key numbers on Reader Service Card

Peanut Butter in Collapsible Metal Tube

Western Pennsylvania is the test market for a peanut butter packaged in a collapsible metal tube. The H. B. DeViney Co. is gaging consumer acceptance of a 6-oz. tube which dispenses the spread in a continuous flat ribbon.

Research by the processor is reported to indicate that the peanut butter is ideally suited to the tube package, which protects it better and longer than conventional packages.

Previously packaged in tubes were cheese, cake icing, anchovy paste, honey and jellies.

Die-Cut Tray Offers Versality, Economy

Recently introduced by Container Corp. of America is a new corrugated grape tray which may be packed three different ways. The heavy-duty, waterproof, die-cut trays will carry 14 lb. of grapes bulk packed in a single layer.

The trays may also be packed with 6 2-lb. consumer units. The consumer packages can be furnished as open baskets suitable for overwrapping in the retail store, or in closed units with cellophane windows. Trays are interlocked in sets of two for shipping.

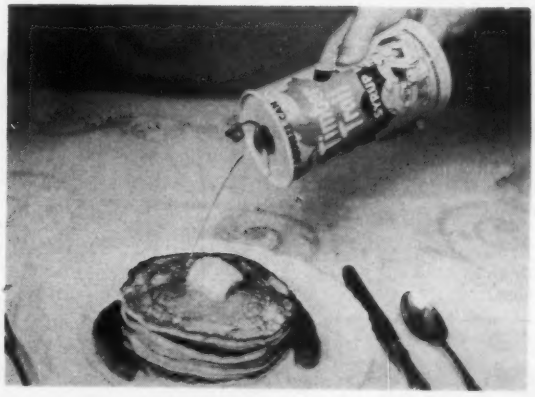
Circle 29A on Reader Service Card

Introduce Newest Packaging Film

A new polyester laminating film that can be adhered under heat and pressure to a wide variety of end products has been developed by Goodyear Tire & Rubber Co.

Called Videne, the film has high packaging potential in its combination with paper or foil to form wraps for food. The film is said to be the first wrap with enough rigidity and dimensional stability to be run on commercially available high-speed, automatic packaging machinery.

Circle 29B on Reader Service Card



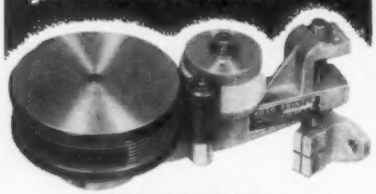
Syrup in Polyethylene Can

Composite polyethylene and metal can is the unusual package used for Timber Trail maple syrup marketed by Food Foundation, Inc. The can is similar in design to the squeeze-cans used for many detergents.

Syrup is dispensed from the 12-oz. package by squeezing. Releasing the can stops the flow without messy dripping. A snap cap is hinged to the spout.

The attraction of the easy dispensing feature has been complimented by the container's light weight and striking shelf appearance. Label is color printed in attractive brown, red, and yellow.

Want to save on
marking?
dating?
coding?
your best choice is the



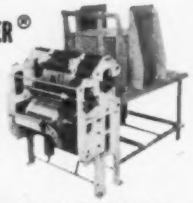
INDUSTRIAL
WHIPPET MARKER®!

Industrial's WHIPPET Marker is the answer to fast, economical in-plant imprinting of bags, cartons, boxes, rolls, cans and the like. Friction motivated, it takes speed from and is controlled by your conveyor line operation. You mark containers as you use them, during production runs. Self inking, and using easily interchanged rubber type, the WHIPPET is solidly built to give years of trouble-free service. Easily installed out of the way on your present production line, it will quickly repay its original cost in extra savings and performance.

Write for complete details and new catalog today.

other INDUSTRIAL units include:

#7 AUTOPRINTER®
—for automatically imprinting cartons and multiwall bags at production speeds up to 3,000 per hour.



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Trans-leaf Coder®
— for automatically marking any material that takes hot dye transfer impressions.

SPECIALS — Our Specialty. We make and supply all types of special marking equipment, custom designed and built for your individual needs. Dept. FE

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Packages & Products

Vac-Dried Instant Coffee

Five years of research preceded the introduction of Paxton and Gallagher's Instant Butter Nut Coffee, now marketed in 2- and 4-oz. glass jars.

The product is made through a process which dries the pure liquid coffee under a complete vacuum. Butter-Nut is reported to be the first major coffee roaster to use the "crystalline" drying process.

50 Years of Ginger Ale

Canada Dry has launched a Golden Anniversary Celebration to honor the creation of its popular ginger ale. During the four week drive all family sized bottles of the beverage will be capped with special gold crowns. Consumers are invited to return three caps for a refund of the price of one bottle.

Gold neck labels will also be used on the 28-oz. bottles during the promotion.

HANDSOME DECANTER bottle is the unusual package for Grenache's table syrup. A glass stopper seals the 32-oz. bottle, made by Owens-Illinois Glass Co. Plastic band seals stopper in place and retains a small recipe booklet.

Circle 30A on Reader Service Card

Garlic Sans Smell

A process which removes the odor of garlic but preserves the strong individual flavor has been developed by Klein's Supreme Food, Midland Mich.

Through a process which uses fresh garlic rather than concentrates or powders, the company is producing a deodorized garlic seasoning which eliminates the problem of "after breath."

Low-Cost Foil Wrap

An aluminum foil bread wrap reported to be competitive in price with many conventional wraps has been developed by the research laboratories of Reynolds Metals Co.

The wrap, a heat-sealable lamination of paper, foil, and wax is now in use at Rice's Baltimore bakery. Trademarked Wrapseal, the wrap is perforated by a new skip-scoring method which eliminates variations encountered in other processes.

Circle 308 on Reader Service Card

Packaging Briefs

New Pull-Tab envelope is utilized for individual servings of Nestle's EverReady Sweet Milk Cocoa.

Hot-Meal menu suggestions are printed on bologna casings manufactured by Tee-Pak, Inc., Chicago.

Zip-String 1 lb. container is used for certified food colors. Can-opening feature was developed by Warner-Jenkinson Co.

Family-Size package of Flakorn Corn Muffin Mix offers economy to consumer. The 1 lb. 4 oz. size is a companion to the company's conventional 12 oz. size.

Institutional cans—50 oz.—are newest packages for Campbell's turkey noodle, chicken vegetable, and minestrone soups.

Impermeable Film Liner produced by R. L. Kuss & Co., Findlay, O., can be tailored to fit snugly any size and shape of container.

Johnson & Johnson has a reason...

BAND-AID* Stars 'n Strips have a special need ... an economical packaging material for adhesive bandages that must prevent bacteria penetration and withstand high temperatures in autoclaves. The answer was a special heat-resistant Riegel glassine known as "sterilizable glassine." In this case, too, *protection* by Riegel means extra benefits ... flexible packaging materials that are:

... tailored to run at high speed on automatic machines
... made to your own specifications, printed, waxed, coated and laminated combinations of all types
... packaging materials that are made right, run right, and priced right.

Hundreds of today's best-sellers benefit from Riegel's uniformly effective system of product protection. You can too.
Write Riegel Paper Corporation, 260 Madison Avenue, New York 16

Riegel

PROTECTIVE PACKAGING MATERIALS

The BAND-AID brand of adhesive bandages uses a special sterilizable glassine made and printed by Riegel. Packaged on custom-built machines.

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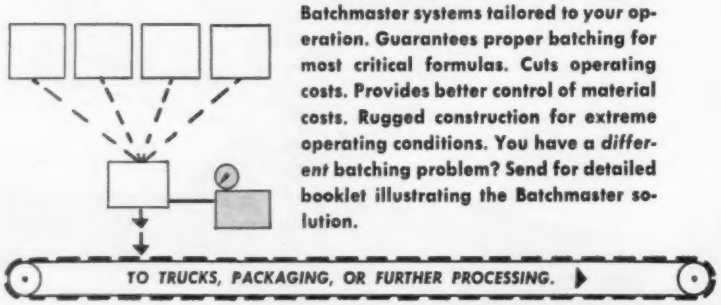
PUSH BUTTON BATCHING

BATCHMASTER speeds food processing

At last, completely automatic one-man batching for you. Batchmaster is the simple, speedy system for precise mixing of multiple ingredients to any desired formula. Accommodates all materials — solid, powdered, granulated, liquid. Provides *continuous* automatic control of all ingredients by weight. Boosts production, improves quality control, eliminates waste.

Simply dial the formula and mixing times, select number of batches, and press start button. Any number of ingredients are automatically fed, weighed, mixed and discharged.

No need for expensive, complex custom installations. Howe engineers *standard* Batchmaster systems tailored to your operation. Guarantees proper batching for most critical formulas. Cuts operating costs. Provides better control of material costs. Rugged construction for extreme operating conditions. You have a *different* batching problem? Send for detailed booklet illustrating the Batchmaster solution.



Write for Complete Details

HOWE

THE HOWE SCALE CO. · RUTLAND, VERMONT

A SUBSIDIARY OF SAFETY INDUSTRIES, INC.

Packages & Products

Eye Appeal *Plus* Utility

Packaging for the new Farm Pac family of frozen red meat cuts features sturdy, protective packaging plus attractive informative pictorial design.

Recently introduced by the Lubbock Packing Co., Lubbock, Tex., the frozen ready-to-cook choice beef tenderloins, top sirloins, and sirloin strip steaks have extra protective packaging—designed for home freezer storage.

Meat cuts are first packaged in Cry-O-Vac pouches and then put in the attractive printed cartons. Sturdy carton construction, using Marathon Wonder White boards, will protect meat in retail cabinets and during prolonged home freezer storage.

Circle 32A on Reader Service Card

New Product Shorts

Pickle Chips that are candied and orange flavored have been introduced by J. J. Gielow & Sons, Dearborn, Mich.

Portion-Controlled Scallops have been added to the Blue Water institutional line.

Unblended Colombian Coffee is packed in a 1 lb. vacuum can by Andew Coffee Co., New York City.

Honey and Lemon Juice blend is newest Realemon product.

Spice Additions to the Food Club line of Topco Assoc. are paprika, chili powder, sage, nutmeg, and red pepper.

Latest Foods for Baby are Swift & Co.'s strained rice with chicken, strained chicken with sweet potatoes, and strained chicken a la king.

Frozen Meat Balls of pork, beef, and veal are packed 20 to a carton by Rath Packing Co.

Vitamin C for Baby is offered in Heinz's new fruit juices. They include apple juice, apple juice with apricots, apple-grape juice, apple juice with pineapple, and apple-prune juice.

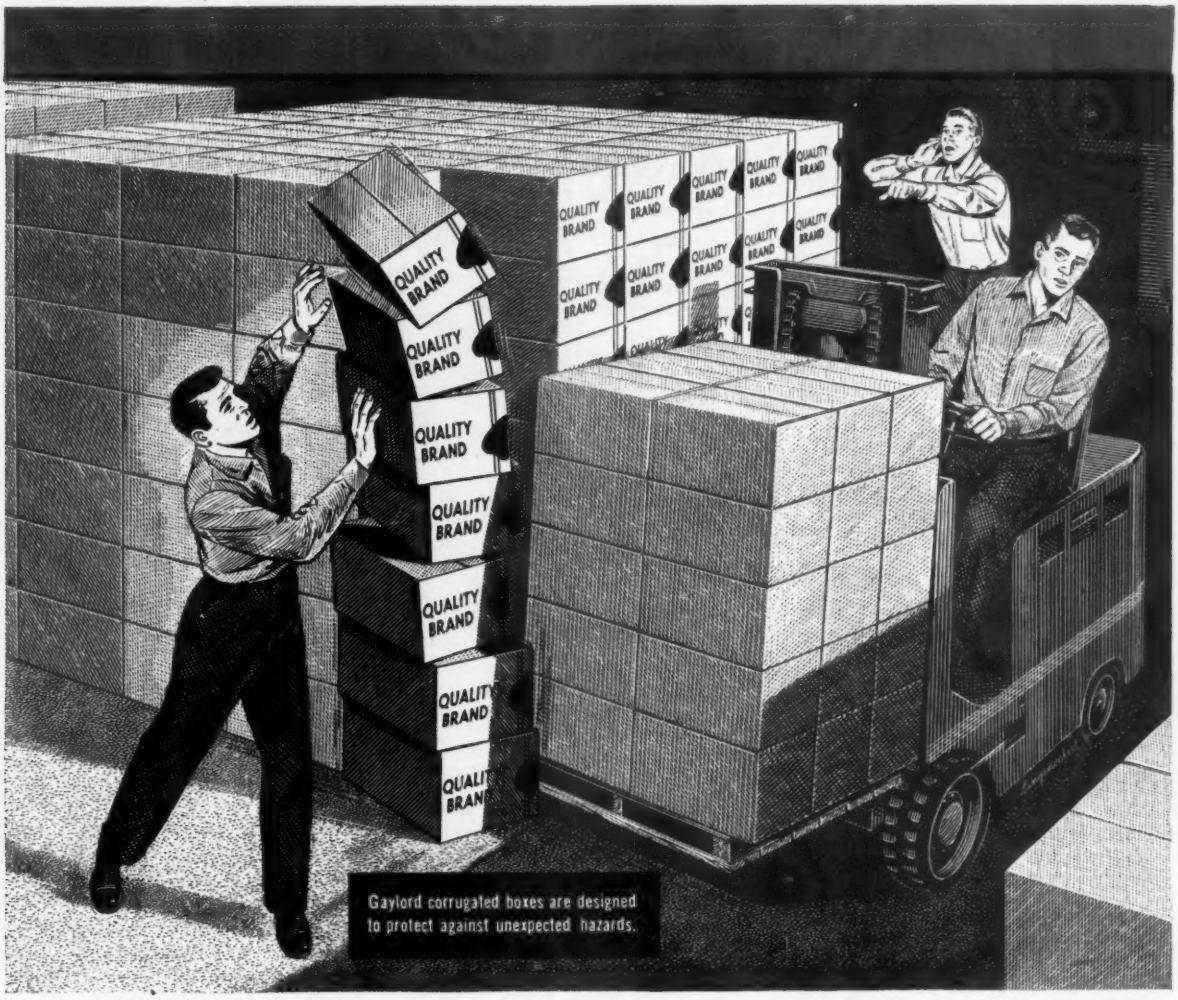
Oyster Stew Soup is now sold by Mavar Shrimp & Oyster Co., Biloxi, Mich. Condensed product packed in a 10-oz. can need not be refrigerated.

Frozen Steaks, chops, cutlets and other red meats will be soon available in a home freezer pack line to be produced by Armour & Co.

Italian Salami marketed under the **Capri** label is packaged in a printed cellophane bag.

Low Calorie Chow-Chow relish packaged in a 1-lb. glass jar has been introduced by L. C. Foreman & Sons, Pittsford, N. Y.

Brown Rice cooking in one-third the time of a conventional product is now marketed by M. J. B. Co., San Francisco.



WHEN YOUR PRODUCT NEEDS A FRIEND

Gaylord Boxes

When your product leaves your plant and starts through the cold world of distribution, its best friend is the box that carries it.

Gaylord boxes have a proven record of carrying products to their destination "safe and sound"—whether they're big and bulky, tiny, square-shaped, pear-shaped, heavy, light, rigid or resilient.

Call your nearby Gaylord packaging engineer.

CORRUGATED AND SOLID FIBRE BOXES • FOLDING CARTONS • KRAFT PAPER AND SPECIALTIES • KRAFT BAGS AND SACKS

GAYLORD CONTAINER CORPORATION ★ ST. LOUIS

DIVISION OF CROWN ZELLERBACH CORPORATION

For more data, circle this page number on card at back →

Highly Intimate Blends in 1 to 2 Minutes

Blends while discharging; No segregation or flotation

Sturtevant Rotary Blenders start 4-way blending while charging, continue it during discharge, thus producing highly intimate, even blends of dry and semi-dry materials – within 3 to 5 minutes of start of charging.

Six *complete* blending cycles per hour are common. And Sturtevant's special action produces no particle reduction, cleavage or attritional heat – is highly effective yet gentle and safe even with explosives.

Receiving

Scoops cascade material as drum rotates. Movement forces material from both ends to middle. Thus blending is 4-way right from start of charging.

Discharging

Single gate controls charge, discharge. Blending continues throughout discharge phase. Result is no segregation or flotation — highly intimate, even blends.

Self-cleaning, dust-sealed drum; one-man accessibility

Operation of Sturtevant Blenders is self-cleaning – drum interiors are completely dust-sealed. For inspection of all models, one man simply loosens a few lugs to remove manhole cover – quickly and easily.

Nine standard models with capacities to 900 cu. ft.

10 cu. ft. Sturtevant Stainless Steel Blender at U.S. Steel's Applied Research Laboratories. Corrosion and contamination-proof, this unit handles batches up to 500 lbs. — is ideal for critical work or small runs.

Automatically controlled, three 50 cu. ft. Sturtevants blend chocolate powder and other ingredients for Hershey Chocolate Corp. Operating in a group, each Blender can process more than a ton per batch. Quick accessibility and self-cleaning features keep maintenance to one hour per week.

Fully or semi-automatic, or manually controlled operation

Constructed of carbon steel, stainless steel or Monel metal, Sturtevant Rotary Blenders are engineered to fit each customer's needs – can be supplied with injector sprays and any desired control system.

For more on Sturtevant Blenders, request Bulletin No. 080B. (Bulletins also available on Mixers, Air Separators, Micronizers, Crushers and Grinders.) Write today. STURTEVANT MILL CO., 106 Clayton St., Boston, Mass.

COMMENTS & QUESTIONS

What They Are Saying About "Food Engineering"

Dear Editor:

I appreciate very much the way you presented my comments on the outlook for 1958.

With respect to your new format, it might well be characterized as highly efficient from the standpoints of presentation and service to the reader. It affords a special opportunity for quick selectivity and fast reading on the material in which one is interested.

My congratulations on having achieved a new standard in business publication format.—William E. Robinson, President, The Coca-Cola Co., New York.

Dear Editor:

I have read my January issue of FOOD ENGINEERING with interest.

The addition of marketing improves on your already fine magazine. And the "signal pages", I know, will prove to be a time saver. My compliments on your attractive presentation.—Harold M. Mayer, Vice-President, Oscar Mayer & Co., Chicago.

Dear Editor:

Just a note to congratulate you and your staff on the January issue. The report on the outlook for 1958, as well as the many fine articles contained in this issue, places your magazine on the top of my reading list.

I have read every issue of your publication for the past eleven years and have enjoyed each of them.—Harry E. Korab, Technical Service Director, American Bottlers of Carbonated Beverages, Washington.

"Thoughtful" Ads Best

Dear Editor:

Your editorial, "Keep Fat Out of Your Promotional Fire", is most interesting and is good, common logic.

We have always felt that the best, lasting advertising was the "thoughtful advertising"—not sensational, but factual. We have always tried to point out to our consumers the healthful facts concerning our products and the advantages of using these products over others.

We have tried not to exaggerate our claims. We feel that this sort of thing tends to fall on deaf ears eventually, and the corporation is generally judged by the advertising it uses.

Any helpful hints for Mrs. Housewife regarding nutritive knowledge has always been appreciated—particularly menus, new flavors, and new methods of making tastier meals.—*Charles P. McCormick, Chairman of Board, McCormick & Co., Inc., Baltimore, Md.*

Canners Need Breather

Dear Editor:

A most important problem faces the canning field this year. It is to plan production realistically.

During the past few years, there has been increased capacity at a faster rate than sales could be increased at profitable prices. It is now necessary to take a breather for a year or two.

Not only should expansion of capacity be temporarily halted, but operations should be brought below capacity for the next few years.

Only in this way can there be a return to a reasonable-profit position.—*President of large and successful canning company.*

Dear Reader:

Certainly something to think about. Canners, like the freezers, have suffered from overproduction. We understand that some food packers have decided to aim their business at profit rather than maximum sales volume.—*The Editor.*

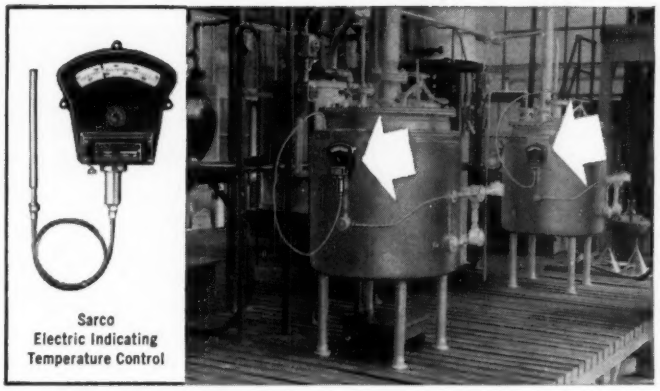
Plant Safety

Question—Safety contests are run in a large number of plants throughout Canada and the U. S. But in the case of our Canadian flour mill, we find it quite a problem to get a good contest running and of interest to everyone.

We found that workers who are really safety minded are unlucky in winning prizes. Could you, therefore, help me out on safety news and better ways to run contests?

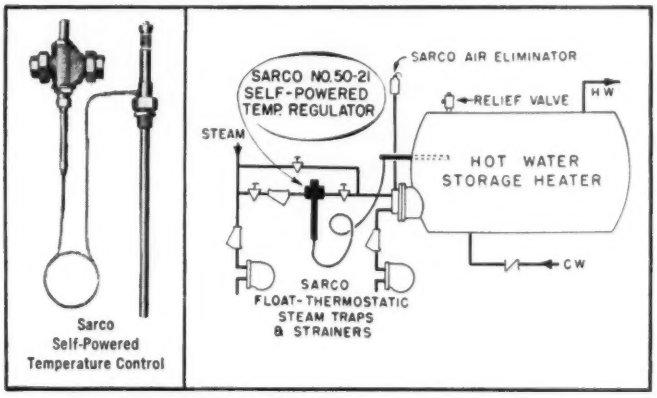
Answer—One of your best sources for safety news and information is the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill. We

End uncertain temperature control this simple low-cost way



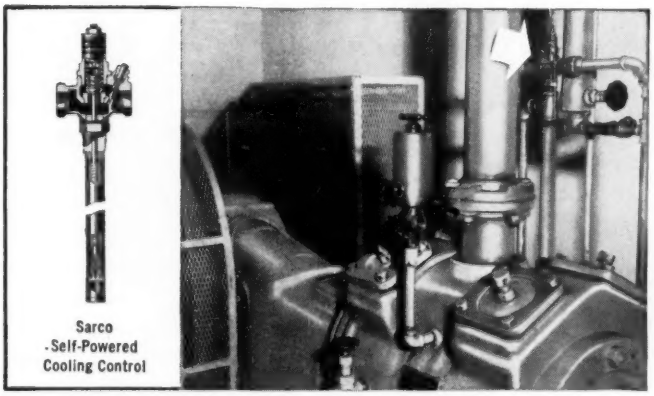
Sarco
Electric Indicating
Temperature Control

STILLS – jacket water temperature of stills held to within ± ½°F. *Other typical applications* – kettles, sterilizers, chemical tanks, plating tanks, processing vats, etc.



Sarco
Self-Powered
Temperature Control

HOT WATER STORAGE HEATER – desired water temperature is automatically maintained. *Other typical applications* – dryers, oil storage tanks, kilns, heat exchangers, etc.



Sarco
-Self-Powered
Cooling Control

COMPRESSORS – controls temperature of cooling water, prevents overcooling and undercooling in compressors, aftercoolers and intercoolers. *Other typical applications* – small engines, condensers, ball mills, water-cooled bearings, lubricating oil coolers, etc.

SARCO Automatic Temperature Controls

Electric Indicating and Self-Powered

Simple—Dependable Inexpensive

YOU CAN get rid of costly, hit-or-miss manual temperature control . . . without investing in expensive equipment.

These Sarco Automatic Controls are simple, inexpensive, dependable. They're ideal for hundreds of temperature regulating jobs . . . all but the few specials that call for costly, elaborate controls.

Electric Indicating Controls by Sarco are simple, sensitive . . . perform many of the functions of much more elaborate recorder-controllers, at fraction of their cost. Responsive to temperature changes of ± ½°F. Cost . . . only about $100.

Sarco Self-Powered Controls need no outside power source. Self-contained. Packless. ½" size temperature controller . . . only about $100. ¾" size cooling control...only about $39.

Users of Sarco Controls include Colgate-Palmolive, Sinclair Refining, Swift, Ingersoll-Rand and hundreds of others.

WRITE FOR BULLETINS

No. 1025 – Electric Indicating Temperature Controls

No. 620 – Self-powered Temperature Controls

No. 710 – Self-powered Cooling Controls

Sarco Company, Inc., 635 Madison Avenue
New York 22, New York

2234-B

SARCO

Automatic Temperature Control

ELECTRIC INDICATING AND SELF-POWERED TEMPERATURE CONTROLLERS • STEAM TRAPS • STRAINERS

Offering a full range of Mack engines—gasoline, diesel, turbocharged diesel—

Two great new MACKS

New look in a proved performer—Mack Model H

Its clean, functional design has just been restyled for even better looks and faster maintenance. It's the famous Mack Model H—higher-built for road-commanding vision. Less than 67 inches from bumper to cab back (without sleeper cab), this Mack C.O.E. is designed to pull maximum-length trailers in bridge-formula areas. With Mack diesel powerplants, ideal gear ratios and full tilt-cab accessibility, it's the top money-maker right now on major fleets across the nation.

New Mack Model N—with power to earn

Here's the new line of Mack C.O.E.'s that combine short wheelbase with set-back front axles for ideal weight distribution on trucks, and maximum front axle loadings on tractors. All models feature *exclusive Mack air-shift* with conventional shifting pattern, short and effortless lever throws, and instant response. Air-boosted hydraulic clutch in all models.

Model N trucks offer the ultimate in panoramic vision, easier parking, bonus cargo capacity, entry-exit ease and smooth-handling maneuverability *—more goods delivered per day.*

Model N tractors handle bonus-length trailers within legal limits; feature "executive suite" cabs engineered for comfort, fume-free ventilation and advanced handling characteristics.

join the Bulldog fleet

And every model has full tilt-cab accessibility
Now! Mack takes the wraps off the widest range of heavy-duty, cab-over-engine trucks and tractors in the nation today.

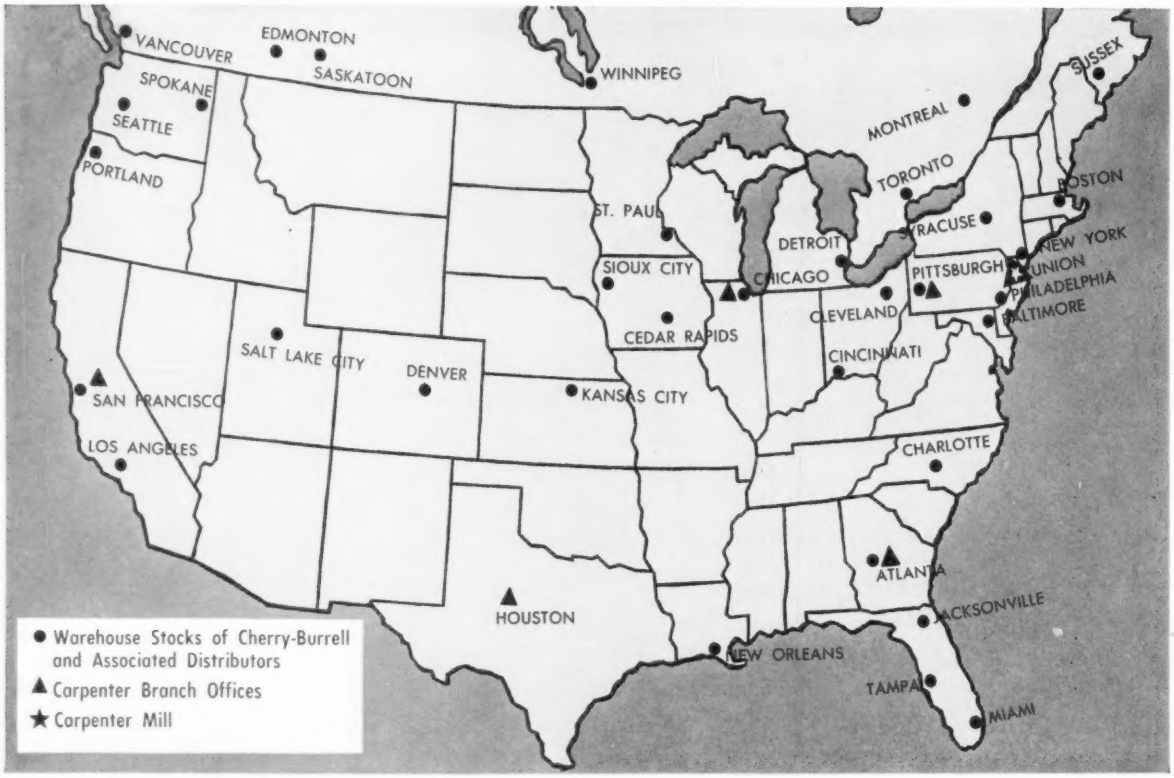
Now! There are Mack trucks and tractors for every important C.O.E. job—for city or suburban work . . . for highway operation in any state, whether restrictions are governed by bridge formulas or not.

Now—you can have any Mack gasoline or diesel engine for your C.O.E. operations. You can, for the first time, have up to 205 diesel h.p. in a low-silhouette C.O.E. unit. You can have the Mack transmissions (5 to 20 speeds), brakes, frames, cabs and suspensions that best meet your needs—including six-wheel models with the famous Mack Balanced Bogie.

Look for these compact new cost-busters on the highways . . . on city streets . . . and in Mack branch and distributor showrooms. There's no matching Mack! Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

IT'S PART OF THE LANGUAGE . . .
BUILT LIKE A

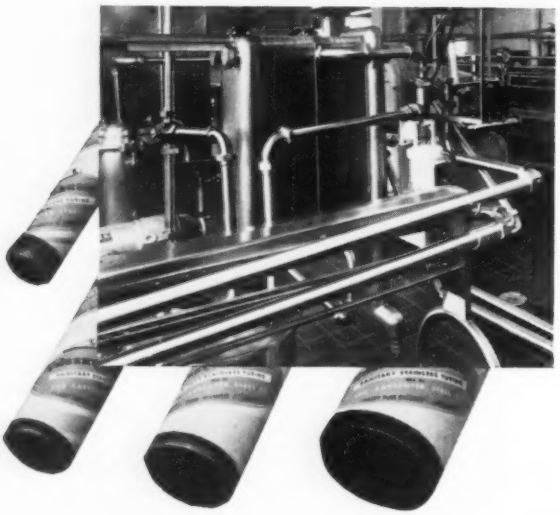
Mack



You're near FAST cost-saving service on Carpenter Sanitary Stainless Tubing

Large warehouse stocks are maintained throughout the U.S. to assure you of fast pick-up and delivery. You'll get prompt service through nearby Carpenter Steel offices or direct from the Cherry-Burrell Distributor in your area.

Available are standard lengths of 10 or 21 ft. in sizes of 1, 1½, 2, 2½, 3, and 4 inches O.D.



Carpenter stainless tubing is proving itself to Cherry-Burrell customers everywhere because it consistently exceeds sanitary code requirements and standard tolerance specifications.

Carefully packaged in protective sleeves when shipped, Carpenter sanitary tubing is easy to assemble. Dependable engineering and technical help is always available to users of this highest quality tubing. For details on availability and special user advantages, contact your nearest Carpenter or Cherry-Burrell representative. The Carpenter Steel Company, Alloy Tube Division, Union, N. J.

MEMBER

Export Dept.: The Carpenter Steel Co., Port Washington, N. Y.—"CARSTEELCO"

Carpenter

more than corrosion resistance

Sanitary Stainless Tubing

understand that this organization includes Canadian firms in its membership. One of their publications, of general interest, is the monthly "National Safety Council News." Another monthly periodical, which may be of particular value to your foremen, is "The Industrial Supervisor."

This Council includes, in the Food Section of the Industrial Department, a Grain Handling and Processing Division. We would strongly recommend that you establish contact with that division, as we believe you'll be in a particularly good position to be advised regarding safety problems relevant to your type of business.

Another possible source of news or helpful bulletins and information would be the Department of Labor in Ottawa.

Contest Suggestions

As for safety contests, space here does not permit an adequate discussion, but we will attempt to give you a few suggestions. Such contests may be useful for attracting the attention of your rank-and-file employees to the subject of safety. But they are not the whole answer to the problem of accident prevention. As you have already observed, the element of luck can enter and result in the winner not being the most deserving of the competing teams.

More important, they cannot substitute for the methodical and necessary analysis of accidents, jobs, unsafe working conditions and unsafe employee practices. That really is the job of front-line supervisors. Neither do contests, which necessarily have a beginning and ending, take the place of continuous education of employees to think and act in terms of safety.

It is possible that one reason you feel dissatisfied with results of your contest is that you realize they do not show the *true* picture of accident prevention in your own mill. American Standards Association has a standard A.S.A. Code Z 16.1, which defines terms to be used for measuring industrial-accident experience—such as frequency, severity, etc.

We recommend that you obtain this and pattern your next safety contest according to standard methods of measuring. Thus, you may bring into the picture first-aid and medical-treatment accidents, in addition to disabling accidents. And you'll get a truer picture of your accomplishments in this important field of safety.

SIFTING?

...do it better, faster, at greater profit with

DAY

ro-ball sifters

Choosing from the long line of standard Day Ro-ball Sifters offers many advantages, including: six different sizes—one to four screens (single screen units carried in stock)—two to five separations—gyrating action—super active ball cleaning—rugged heavy duty construction.

If your production requires sifting, you'll want a Day Ro-ball Sifter data sheet, listing all dimensions and specifications. Write today.

PLASTICS
FEEDS
CHEMICALS
FOODS
COSMETICS
MILK
DETERGENTS

DAY Ro-ball Sanitary Sifter, just added to our line of sifters, is designed to meet all requirements of the Dairy Institute Code for Grade A Products.

The **J. H. DAY** *Co.*

Division of the Cleveland Automatic Machine Company

SERVING THE PROCESS INDUSTRY SINCE 1887

4924 BEECH STREET, CINCINNATI 12, OHIO

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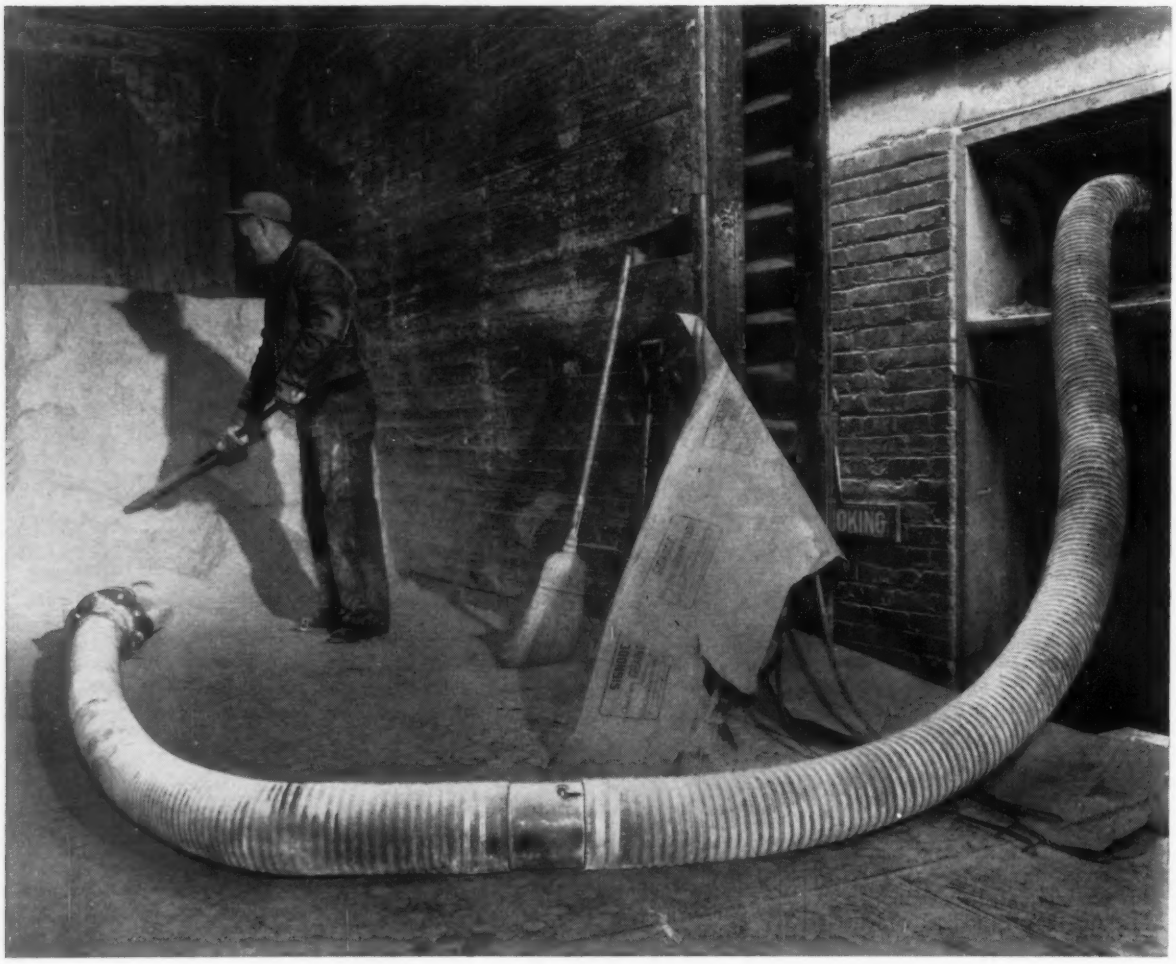
B.F.Goodrich report:



Rubber straw gulps cattle feed by the carload

B. F. Goodrich improvements in rubber brought extra savings

Problem: In making a special feed supplement for animals, this company uses sharp, abrasive oyster shells and soya by the carload. It used to be unloaded from railroad cars to factory in flexible metal pipe. But the steel couldn't stand it. Friction of the abrasive mixture was wearing through the pipe in six months.

What was done: When a B.F.Goodrich distributor heard about the trouble, he suggested a B.F.Goodrich hose, made with a special lining of the toughest, wear-resisting rubber known. This rubber is soft enough to give under the beating it gets, yet so tough that it's even used in some places to carry broken glass.

Savings: This B.F.Goodrich hose was tried, and has been unloading 90 tons a week ever since. It's already lasted twice as long as the flexible metal pipe, and is expected to give three or four times the service.

Extra benefits: In addition to making this hose stand abuse, B.F.Goodrich engineers have also made it light and flexible, easy for workmen to handle. A coil of round steel wire, buried in the hose, keeps it from crushing, kinking or collapsing even under powerful suction.

Where to buy: Your B.F.Goodrich distributor has exact specifications for the B.F.Goodrich hose used for this materials-handling job. And, as a factory-trained specialist in rubber products, he can answer your questions about *all* the rubber products B.F.Goodrich makes for industry. *B.F.Goodrich Industrial Products Co., Dept. M-284, Akron 18, Ohio.*

B.F.Goodrich

INDUSTRIAL PRODUCTS

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Jenni Genetron says,

"HERE'S THE RIGHT REFRIGERANT FOR EVERY NEED!"

genetron® SUPER-DRY REFRIGERANTS

Selected Physical Data
(Performance based on 5°F evaporator temperature and 86°F condenser temperature)

	genetron 11 ORANGE LABEL	genetron 12 WHITE LABEL	genetron 22 GREEN LABEL	genetron 113 PURPLE LABEL	genetron 114A DARK BLUE LABEL
Chemical Formula	CCl_3F	CCl_2F_2	$CHClF_2$	$C_2Cl_3F_3$	$C_2Cl_2F_4$
Molecular Weight	137.4	120.9	86.5	187.4	170.9
Boiling Pt. (°F) at 1 Atm. Pressure	74.7	—21.6	—41.4	117.6	37.6
Evaporator Pressure at 5°F (p.s.i.g.)	24.0*	11.8	28.3	27.9*	15.6*
Condensing Pressure at 86°F (p.s.i.g.)	3.6	93.3	159.8	13.9*	22.7
Freezing Point (°F) at 1 Atm. Pressure	—168	—252	—256	—31	—76
Critical Temperature (°F)	388	234	205	417	294
Critical Pressure (p.s.i. absolute)	635	597	716	495	478
Compressor Discharge Temperature (°F)	112	101	131	86	88
Compression Ratio (86°F/5°F)	6.24	4.08	4.06	8.02	5.33
Specific Volume of Saturated Vapor at 5°F (cu. ft./lb.)	12.27	1.46	1.25	27.04	4.04
Latent Heat of Vaporization at 5°F (B.t.u./lb.)	84.0	68.2	93.6	70.6	60.2
Net Refrig. Effect of Liquid—86°F/5°F (B.t.u./lb.)	67.5	50.0	69.3	53.7	43.0
Specific Heat of Liquid at 86°F (B.t.u./lb.°F)	0.21	0.24	0.34	0.22	0.23
Specific Heat of Vapor at Constant Pressure of 1 Atm. & 86°F (B.t.u./lb.°F)	0.13	0.15	0.15	0.15	0.16
Specific Heat Ratio at 86°F & 1 Atm. (k=Cp/Cv)	1.14	1.14	1.18	1.09	1.01
Coefficient of Performance	5.09	4.70	4.66	4.92	4.60
Horsepower/Ton Refrigeration	0.927	1.002	1.011	0.960	1.025
Refrigerant Circulated/Ton Refrig. (lbs./min.)	2.96	4.00	2.89	3.73	4.65
Liquid Circulated/Ton Refrig. (cu. in./min.)	56.0	85.6	68.0	66.5	88.7
Compressor Displacement/Ton Refrig. (c.f.m.)	36.32	5.83	3.60	100.76	18.78
Toxicity (Underwriters' Laboratories Group No.)	5A	6	5A	4-5	6
Flammability & Explosivity	None	None	None	None	None

*Inches of mercury vacuum.

COMPARE! Careful control at every step in the manufacture of "Genetron" Super-Dry Refrigerants results in products of highest purity, which are extremely low in moisture content and other undesirable impurities. Quality of current production consistently *surpasses* the rigid manufacturing specifications for these products. Write for important informative folder "Genetron Super-Dry Refrigerants."

SEE YOUR WHOLESALER
or write or call
genetron DEPARTMENT
GENERAL CHEMICAL DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.

GC Allied Chemical

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Packaging Problem? Here's how Patterson Frozen Foods solved theirs!

"We used self-sealing PRESSEAL cartons," said Mario Ielmini, president of Patterson Frozen Foods. "Some of our frozen foods packages could not be handled by mechanical equipment. A comprehensive cost survey in our plant of taping, stapling, and similar methods proved PRESSEAL as the economical solution to a problem no other packaging technique could solve."

You, too, can solve your packaging problems with easy-to-use self-sealing PRESSEAL cartons which completely eliminate taping, gluing, stapling, and other sealing equipment. Factory treated PRESSEAL carton flaps adhere together with the pat of a hand, but these same flaps will not stick to other surfaces. PRESSEAL slashes labor costs, saves time, speeds production, requires no auxiliary material or equipment. Sturdy PRESSEAL cartons withstand rough usage and prolonged storage.

PRESSEAL can be used with an infinitely wide variety of products including: floor tiling • medical supplies • clothing • toys • stationary supplies • industrial parts • paint • tools • candy • packaged foods • and many others

If you're packing in corrugated cartons, you'll be packing better with PRESSEAL!

For Information on

PRESSEAL©

PATENTS PENDING

Write to

GROWERS CONTAINER CORPORATION

PLANTS IN SALINAS AND FULLERTON, CALIFORNIA AND JACKSONVILLE, FLORIDA

HEADQUARTERS in SALINAS, CALIFORNIA
SALES OFFICES — CALIFORNIA: Salinas, Fullerton, San Francisco, San Jose, Santa Rosa, El Centro, Fresno • FLORIDA: Jacksonville, Tampa, Miami Springs, Orlando • ARIZONA: Phoenix • LOUISIANA: New Orleans • GEORGIA: Atlanta ILLINOIS: Chicago • ALABAMA: Birmingham • SOUTH CAROLINA: Greenville

But There Is No Recession in Eating!

Recession there is, yes—for the economy as a whole. But it's mild.

Unemployment there is—somewhat more than there should be.

Reluctance to buy there is—especially for consumer durable goods. This is documented by a University of Michigan survey.

Less unfilled demand there is—for consumer durables. And the U. of M. study indicates some cooling off in the yen of adults for new gadgets.

But there is no recession in the food industry. Unemployment does not stem from our factories. Reluctance to buy food there is none of—not even for quality and convenience items. Caught-up demand you don't have for products consumed three times a day, and at a rate increasing even faster than the population.

Even in the deep, dark depression of the '30's, food manufacturing held up to 75% of capacity—while most other industries were flat on their backs. And our industry never failed to make a profit.

You will find no complacency among food manufacturers. But the reasons are competition and rising costs which squeeze profits.

There is no worry about level of business. Instead alert food companies see new opportunity in this little recession. The less people spend for durables, the more dollars left to buy food—convenience and quality items.

Consumer buying power is high, and is expected to go higher this year. Food stores turned in their best performance in January, boosting sales 13.7% to a new peak of $4.195 billion.

It is the destiny of our industry to take the housewife out of the domestic kitchen—the cook out of the restaurant kitchen. The industry has been moving in that direction, fast.

This goal is a magnet of consumer desire that attracts progress, while social and economic forces push from behind.

So recession be damned! It's full steam ahead for food!

And Get on "Food Comes First" Bandwagon

It couldn't have happened at a better time—the "Food Comes First" National Food Conference in Washington last month.

Conceived by American Farm Bureau Federation, its purpose was to turn national, state, and county spotlights on the need for better eating habits—better balanced diets.

"Food Comes First" already is rolling, backed by a score of food manufacturing, retailing, and farm associations—even to advertising. Farm Bureau leaders in 47 states and nearly all agricultural counties are organizing state and local committees. And kits of promotional material have been made available.

The NFC organization itself is being disbanded. It served its purpose of getting the ball rolling. Now it is up to food manufacturers and retailers to help keep it rolling—locally and nationally.

Among American households, 29% have diets deficient in calcium; 25% in vitamin C; 19%, riboflavin; 17%, thiamine; 16%, vitamin A; 10%, iron; 8%, protein; 7%, niacin. And inadequate breakfasts are a common curse.

The need is there. The opportunity has been created. Take a hand in making consumers more aware of good eating habits. Make "Food Comes First" a household expression in America.

Do this and you'll take double advantage of the recession in other industries.

Make Sales Grow...

UPGRADE Your Frozen Food Profits

In the tough competition of today's market, more and more packers are learning that a *premium* item can be the key to profitable operation. And more and more packers are looking to Huron* MSG as the secret to better quality that leads to bigger sales and profits. The reason, of course, is that Huron MSG enhances the flavor, taste appeal, quality, *and demand* for a frozen vegetable, meat, fish, or processed food.

By upgrading your frozen food product with Huron MSG, you can create a premium item, promote it at an increased price, and increase your sales and profits. It's working *now* for other packers—it can work for you. Try it today! For complete information, see your Huron representative.

**Hercules Trademark*

HURON* **MSG** HURON MILLING DIVISION

VHG57-1(R)

Virginia Cellulose Department **HERCULES POWDER COMPANY** INCORPORATED *Wilmington 99, Delaware*

MANUFACTURERS OF HVP® AND AGE-IT®: WHEAT GLUTEN AND WHEAT STARCH

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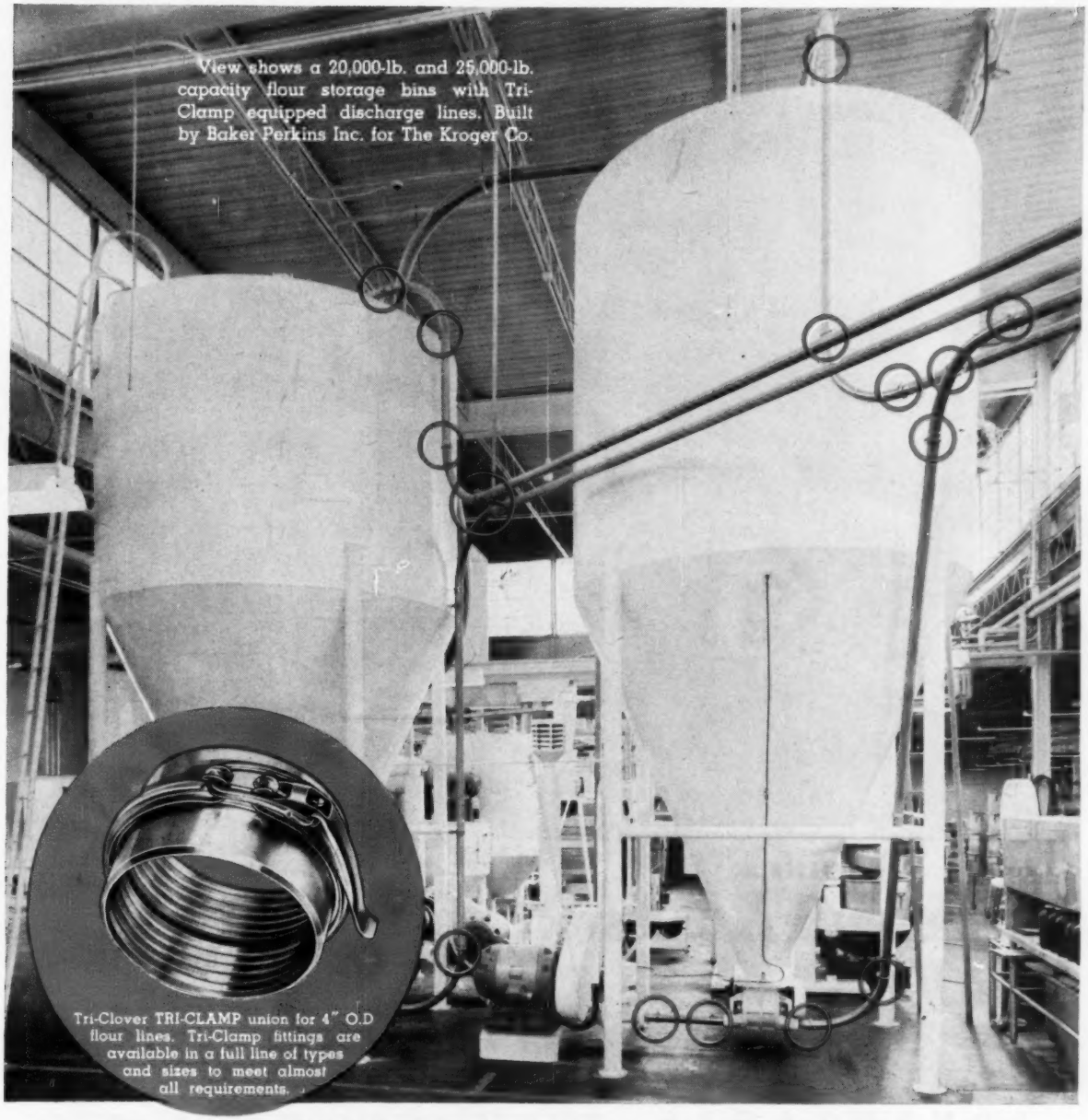

View shows a 20,000-lb. and 25,000-lb. capacity flour storage bins with Tri-Clamp equipped discharge lines. Built by Baker Perkins Inc. for The Kroger Co.

Tri-Clover TRI-CLAMP union for 4" O.D flour lines. Tri-Clamp fittings are available in a full line of types and sizes to meet almost all requirements.

TRI-CLAMP® FITTINGS used extensively in Baker Perkins Pneumatic Flour Handling System for The Kroger Co.

Baker Perkins Inc. has gained an enviable reputation for their ability to plan, build and install modern, efficient pneumatic flour handling systems. Designed to meet the specific needs of today's high production bakeries, these Baker Perkins Systems make extensive use of Tri-Clover Division's TRI-CLAMP Stainless Steel Fittings.

Good example of one such installation is the Baker Perkins Pneumatic Flour Handling System shown above, designed and built for The Kroger Co., in which numerous Tri-Clamp snap-action unions are used to insure leak-proof joints that are instantly assembled or disassembled. Fabricated of sparkling clean stainless steel, these Tri-Clamp fittings are built for years of sanitary, trouble-free service.

Write for literature, or see your nearest TRI-CLOVER Distributor.

Export Department--8 South Michigan Avenue, Chicago 3, Illinois, U.S.A.

LADISH CO.
Tri-Clover Division
Kenosha Wisconsin

TRI-CLOVER

S157

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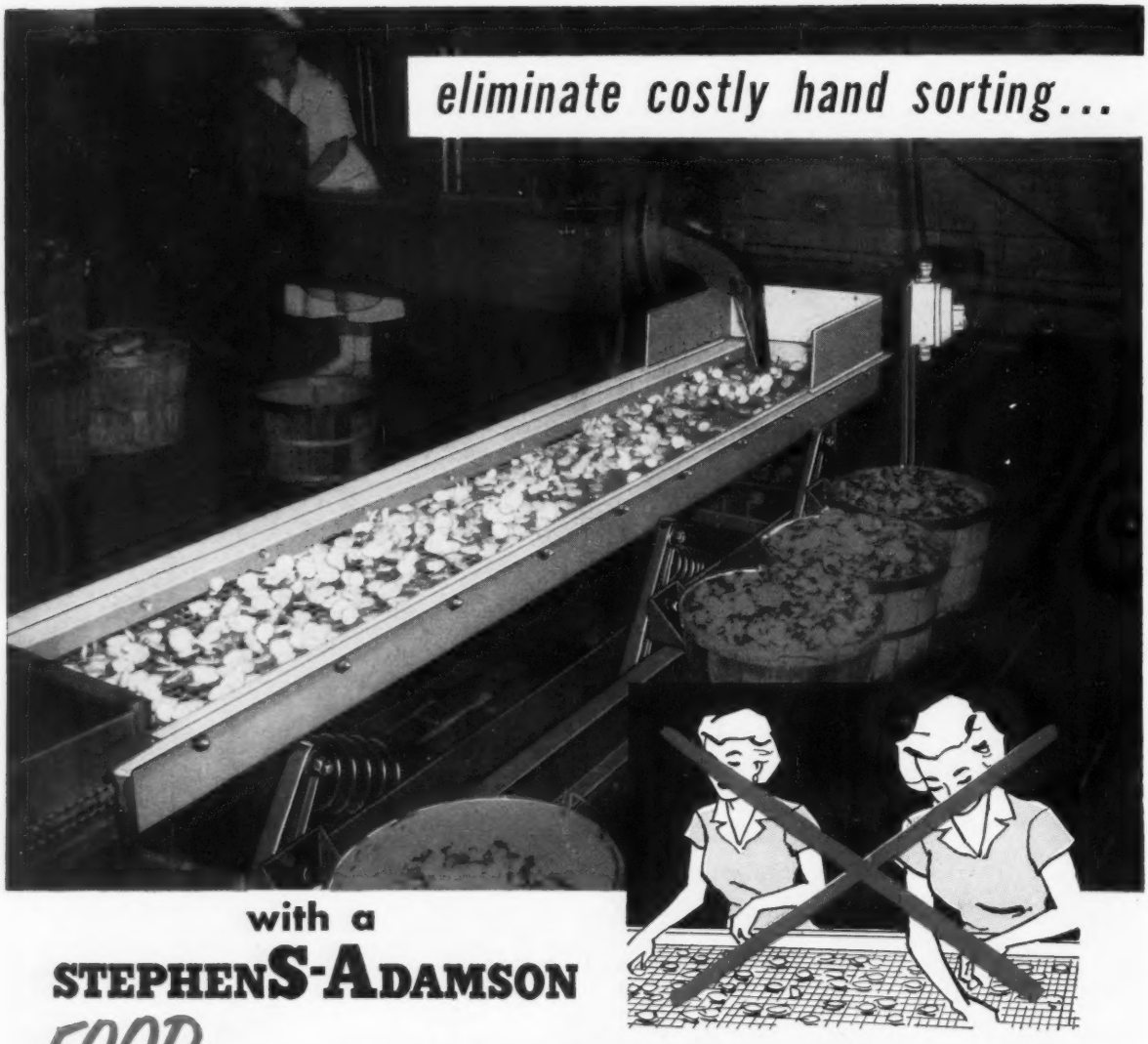

with a

STEPHEN S-ADAMSON

FOOD SLICE SEPARATING MACHINE

ADVANTAGES

- Quickly and automatically separates ends and small pieces from normal size food slices.
- Increases hourly processing capacity . . . eliminates hand sorting.
- Stainless steel screens available in standard mesh sizes from 1/8" to 2" to handle almost any type of sliced material.
- Works successfully in combination with Urschel Model "O" and "OV" Transverse Food Slicers.
- Designed and ruggedly constructed to provide easy installation and efficient, trouble-free operation.
- Stocked for immediate delivery.

The S-A Food Slice Separating Machine is designed to quickly and efficiently separate pickle ends and loose seeds from pickle slices, separate pits from fruit slices, and remove scraps and undersized pieces from almost any type of fruit or vegetable. The S-A Food Slice Separating Machine will handle up to 6,000 lbs. per hour on the 21-inch unit and up to 12,000 lbs. per hour on the 36-inch unit. Products are conveyed at a speed of 30 to 40 feet. The trough and all points of food contact are fabricated of stainless steel for ease of cleaning.

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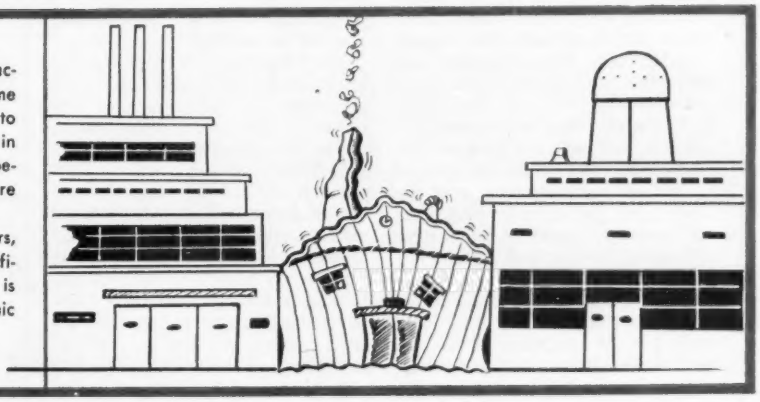
FOOD ENGINEERING MARCH 1958

"As more and more firms have accepted the technologies, it has become increasingly difficult for small firms to compete. With the larger investments in machines, research facilities, and specialized technicians, economic pressure mounts for the smaller firms.

Often by hard work, long hours, and special sacrifice, the small, inefficient plants persist . . . However, this is economic tenacity rather than economic efficiency."



Grow Larger to Survive

Fewer plants and bigger business! That's the inexorable trend forced by today's marketing and manufacturing pressures . . . These dairy field specifics spotlight vital factors affecting every branch of the food industry

MOST OUTSTANDING among the aspects of today's food business is its definite trend away from the small scale and toward the large scale. The economic historians direct our attention to the shattering of older 19th Century institutional patterns by the Industrial Revolution, as it carried us through the great mergers of 1890-1904 and 1918-1928.

Now, mergers are again occurring rapidly, and this "Automation Revolution" is being hailed—or condemned—as a force comparable with the Industrial Revolution itself.

As indicated, food operators have been among the last to apply corporate mass methods. The Reason: Until recently, the technological processes necessary for food preparation and marketing were so simple that large-scale methods were unnecessary and uneconomical. For instance, when the producer sold his unpasteurized milk directly to his neighbor, or the neighbor came over to pick up his own butter or eggs, there was no need for elaborate industrial techniques. Today, however, food industrialization has us all on economic edge.

Fewer Firms

Plant mergers have in recent years been most pronounced among manufacturers of food and kindred products. Number of firms in this group declined nearly 40% in the 5 years between 1946 and 1951. And number of firm discontinuances during recent years has been much larger than number of firm starts.

As late as 1939, our food establishments averaged less than 20 workers per establishment. But by 1954 they averaged 40.9 (Table I). Increased efficiency has allowed each establishment to up output even more than employee numbers.

For example, recent research at Purdue shows the dairy manufactured-products field achieving a given output with about one-third as many inputs as were required in 1919. Other food spheres, including fluid milk, have shown somewhat similar advances. To gain such efficiencies, size must often be increased.

Technological innovation usually rewards the innovator with returns greater than those going to firms which must accept it because of competition. Prices are determined on the basis of the average cost of the marginal concern. Since these innovations are usually cost-reducing, the innovator may reap substantial profits by cutting his cost below that of the marginal firm.

However, in due time, competition assures widespread use of the technology. When the marginal firm has accepted it, prices drop. The innovator's profits may then be no greater than before the innovation. Yet, all plants must adapt to the innovation or die.

CHARLES E. FRENCH and WILLIAM A. JARRETT

Respectively, Professor and Research Assistant, Agricultural Economics Department, Purdue University, Lafayette, Ind.

8 Factors Decide Your Future

Trends have set the stage for a new era in food processing and marketing. And food manufacturers must face up to the following eight developments, which the author sees clearly silhouetted upon the economic horizon of the dairy field.—**The Editors**

1. Increased industrialization and automation. Today's food processing and marketing lend themselves to industrialization. Standardization is increasing; food arts are disappearing. Certain technical bottlenecks, such as an instant butterfat test, must be solved. But the bigger problem is to convince the makers of automation equipment that the food industry is a fertile field for them.

The automation people are of the same frame of mind as those who made the machine tools for the Industrial Revolution. Just as the food industry was bypassed in the last century for the manufacturing industry, it is already being bypassed in the automation race. Granted, today's food industry is probably not the most lucrative outlet for automatic equipment. But in the near future it can become a first-class outlet.

2. More vertical integration. One of the most sensational developments in modern food processing is the vertical integration of production, marketing, and distribution. Here the rewards can be high.

Many of the above industrialization trends foster this development. Great experiments are underway or being planned for more integration in food marketing. Many more are to come.

3. Growth of countervailing powers in food marketing. The declining numbers of firms along with increasing size, tends to mandate larger agencies to bargain with these groups. Farm cooperative size will be increased. Retail bargaining units are growing and will continue to grow. Unfair price competition is knitting together the trade association bargaining and policy groups. Thus, all along the line, a smaller number of larger units will be dealing with each other.

4. Increased government control. With growing countervailing power among the different marketing institutions, more referees will be needed. In this business, such referees come with public sanction of government control. Administered prices will increase with more governmental marketing orders and agreements. Additional legislation at the state level to protect against unfair price competition will be fostered.

The bargaining scheme of countervailing power can easily leave little protection for the consumer. The consumer secures her countervailing power through public agencies.

5. More national markets. Few products will find the economic comfort of an isolated market. National markets will be the rule, and most products will have to be tailored to compete in such national markets. Fluid-milk markets have been essentially freed from their historical, isolated concept. Markets will continue to widen.

6. More rigid standards and grades. It is inconceivable that products can be sold in a national market without greater standardization and recognized grades. More and more products are being sold under government grades or standards. The tendency will be to increase this program to match the national distribution channels.

7. More efficient production methods. Technology will force widespread adoption of improved operating practices, especially those that reduce labor requirements. Labor is still a very high cost item in most marketing processes. We will substitute other items for labor when economical.

Stress must be laid upon work methods, equipment selection, layout, job descriptions, training programs, and all the other production efficiency methods, if the full potential of automation is to be realized.

8. Increased research. Vital will be research in such areas as improved use of product. We are still wasting or feeding to animals nearly one-fourth of the nonfat part of our milk. Such waste cannot be tolerated in the food economy of the next several years.

In the food marketing atmosphere of the future, there will be unusual need for research dealing in management techniques. So-called operations research, making use of "electronic brains," must become a "household technique" of tomorrow's successful operators.

Undoubtedly, many small firms have been able to survive while larger concerns exploited new technologies. But as more and more firms have accepted the technologies, it has been increasingly difficult for small firms to compete. With larger investment in machines, research facilities, and specialized production technicians, the economic pressure mounts high for the smaller firms.

Often by hard work, long hours, and special sacrifice, small inefficient plants persist while disregarding more efficient techniques. However, this is economic tenacity rather than economic efficiency.

Although late in getting started, the technological and industrial surge in dairying is now in full swing.

The current wave of bulk handling, in-place cleaning, paper packaging, and other innovations, is being closely followed by another wave of plastic packaging, new product development, and—at the crest—automation.

The accompanying sharp reduction in plant numbers puts this trend in focus as a major economic and political problem. Researchers have pounced upon it. The Federal Trade Commission has asked the major dairy companies some rather pointed questions. Individual operators have suddenly become very interested in the "long run outlook."

Some recent studies give us a fair idea of how fast the plants are dwindling. The Census of Manufactures found that between 1947 and 1954 the number of butter plants declined 34%, cheese 18%, condensed milk 20%, and ice cream 6% (Table II). Dr. Stewart Johnson, of the University of Connecticut, found that the mortality rate of fluid milk plants was also quite high (Table III). Further, he shows that several companies have won sizable sales increases (Chart 1). In most cases, these rises have resulted in larger returns per share of stock and per dollar of sales for the companies.

It is difficult to see the situation with true clarity. However, University of California economists have worked from FTC studies to give the following picture (per the Feb. '57 *Journal of Farm Economics*) of acquisitions of dairy firms by leading organizations between 1948 and 1954:

Foremost Dairies, Inc.	85
Beatrice Foods Co.	62
Borden Co.	59
Carnation Co.	24
National Dairy	19
Arden Farms	15
Fairmount Foods	9
City Products Corp.	8
Pet Milk Co.	7
Swift and Co.	6
Abbots Dairies	4
Dairy Cooperatives	224
All others	540
Total	1,062

Certainly, the larger companies have acquired many smaller ones. However, the greatest total number of acquisitions appears to have occurred among the smaller companies, with cooperatives accounting for more than one-fifth of them. Yet, the ten largest companies still accounted for about one-fourth.

These studies estimate that the eight largest companies accounted for 35.2% of the dairy products sold in 1948 and 37.5% in 1954. Similar comparisons show that the com-

TABLE 1 — ON THE RISE Are the Number of Food-Plant Workers and Dollar Values Added

Year	Av. Workers Per Establishment*	Av. Value Added Per Establishment, 1926 Dollars (Thousands)**
1929	13.7	64.2
1931	13.9	79.6
1939	19.8	111.0
1947	30.2	163.2
1954	40.9	195.9

*Food and kindred-products group per *Census of Manufactures*, excluding manufactured ice, prepared animal feeds, canned seafood, and cured fish, and including alcoholic beverages only in 1939 and 1947. Note that data for all census years given here may not be strictly comparable due to changes in classifications and coverage.
**B.L.S. Index of Wholesale Prices of All Commodities has been applied to adjust the values.

TABLE 2 — DOWN GOES the Number of Dairy-Product Concerns

Year	Creamery Butter	Natural Cheese	Condensed Milk	Ice Cream & Ices
1947	1,904	1,738	451	1,690
1954	1,262	1,419	359	1,587

Source: *Census of Manufactures*, 1954.

TABLE 3 — DROP IN NUMBER of Fluid-Milk Distributors, 1950 to 1956, Selected States

State	Number of Distributors 1950	1956	Decrease '50-'56 (%)
Montana	331	99	—70
Wisconsin	571	310	—46
Ohio	821	545	—34
Maine	683	463	—32
Massachusetts	1,605	1,177	—27
California	2,181	1,598	—27
Washington	434	323	—26
Connecticut	857	633	—26
Rhode Island	264	202	—23
Pennsylvania	1,928	1,482	—23
Vermont	224	185	—17
New Hampshire	344	301	—12
New Jersey	2,258	2,134	— 5
New York	3,056	3,010	— 2

Source: *Dairy Marketing*, Extension Publication of College of Agriculture, University of Connecticut, Storrs; Stewart Johnson, Oct. '56.

TABLE 4 — FOCUS ON FALL of Licensed Dairy-Products Plants in Indiana — From 450 to 265 Between 1939 and 1955

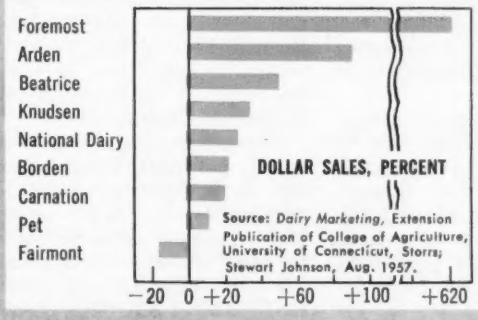
Products	Number of Plants 1939	1942	1945	1948	1951	1955
Butter	46	28	23	17	14	13
Milk	238	224	246	221	189	120
Ice cream	10	8	4	10	12	10
Cheese	27	25	22	16	17	14
Condensed milk	7	11	8	8	10	5
Butter & Milk	36	39	19	16	7	7
Butter, milk, ice cream	27	19	17	12	9	5
Milk & ice cream	25	33	26	45	46	46
Condensed & Dried	..	..	4	7	5	0
Others	34	36	41	38	34	45
Totals	450	423	410	390	343	265

Source: Creamery License Division, Purdue University. Note: All Indiana firms buying milk and cream on a butterfat basis must be licensed.

TABLE 5 — CLOSE-DOWNS AND OTHER CHANGES of Indiana Fluid-Milk Plants, 1946-1956

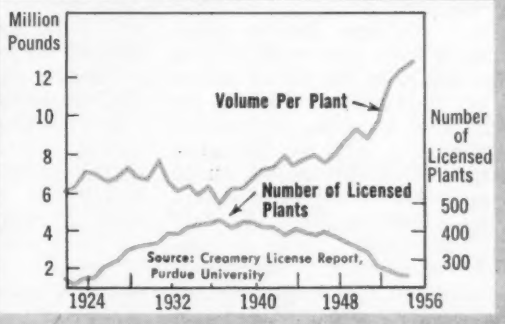
Year	Number That Stopped Operating	Accepted Distributorships	Changed Ownership	Totals For Year	% of All Plants
1946	10	1	2	13	3.2
1947	10	1	1	12	3.0
1948	11	3	3	17	4.2
1949	7	3	0	10	2.6
1950	16	4	0	20	5.2
1951	16	6	2	24	6.6
1952	14	7	2	23	6.7
1953	11	9	1	21	6.8
1954	6	2	1	9	3.2
1955	2	9	2	13	4.3
1956	9	6	0	15	5.4

CHART 1 — SALES HAVE GENERALLY ZOOMED for the Large Dairy Operators (Period 1951-1956)



Source: *Dairy Marketing*, Extension Publication of College of Agriculture, University of Connecticut, Storrs; Stewart Johnson, Aug. 1957.

CHART 2 — PLANTS DWINDLE, BUT VOLUME ROCKETS (State of Indiana, 1922-1955)



Source: Creamery License Report, Purdue University

Continued

bined sales of National Dairy Products Corp. and Borden Co. comprised 22.5% of the total sales in 1948 and 21.8% in 1954. Many of the plants which sold out were quite small. Conservative estimates placed the average annual sales volume of more than 500 of these plants at only $300,000.

The authors have recently taken a rather close look at developments in their own state—Indiana. Here, dairy operations are diversified, hence many of the trends will be useful guides for those in other states. Let's see what was found:

Number of dairy plants in Indiana increased rather regularly from 1922 to 1940, while volume per plant decreased slightly. However, in 1940 the number of plants started to decline at a noticeable rate, while volume per plant started to increase. And ever since then, these changes have run at a growing rate (Chart 2).

Use of new technology, along with shifting consumer preferences, have forced plants to develop new utilization patterns. The big drop has been in amount of milk used for butter, with increases in more luxury-type products, such as ice cream, cheeses, and cream-style products. These Indiana changes conform closely to the U. S. patterns.

Also, the types of plants have changed. Coming especially to the fore has been the fluid milk-and-ice cream combination plant (Table IV). Of course, we have lost heavily in number of straight butter plants. Further, Indiana has been losing about the same percentage of its remaining fluid plants each year (Table V).

Over the period 1946-1956, the state had 177 fluid plants changing status. Of these 63% closed out entirely. Another 29% took on distributorships for other plants, usually larger operations. And 8% merely changed ownership and continued to operate.

Most of these Indiana plants changing status were small—57% of them processing less than 1 million lb. per year, or about 2,700 lb. per day. Many had been producer-distributors prior to the late '30s, when compulsory pasteurization caused them to acquire outside producers.

In addition to these 177 fluid plants, there was a change in status of 22 combination plants (plants processing over 10% manufactured products, but less than 100% manufactured products); 59 manufacturing plants; and 17 receiving stations. Most closed out entirely. *End*

VIEW OF TOMORROW: Pilot punctures can and takes liquid food via

Technologists Create

Eating in wide blue yonder poses tricky problems. Answers are coming in liquid meats consumed through tube, solids ejected from "lip-stick" holder, squeeze-tube items, and tablets. Other special diets already in use

CONSTANT IMPETUS in food technology is a "must" for the U. S. Air Force.

—For it's paramount that our sky crews be ever maintained at peak mental and physical condition. And this calls for persistent development of palatable, nutritious foods for IF (inflight) feeding.

But this IF feeding poses a number of difficult problems due to these seven factors: (1) Longer-range aircraft, (2) longer runs through aerial refueling, (3) confined space for crews and feeding equipment, (4) oxygen masks and pressurized suits, (5) availability for foods for consumption, (6) complicated machines traveling at supersonic speeds, and (7) stress of flying and combat.

In view of these problems, there's high concentration on pre-, in-, and post-flight foods and feeding by the Aero Medical Lab, Wright-Patterson Air Force Base, in cooperation with the Quartermaster Food & Container Institute.

They're searching out, developing, testing, and standardizing the necessary foods, containers, and food-servicing devices. As for processes, ready applicable advanced methods are being adopted, others modified, still others created.

Specifically, Air Force food research and development are aimed to minimize stringent situations of combat periods and extremes of

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"

tube fitted through helmet. Seen are supersonic B-58 and conception of space rocket (courtesy *Aviation Week*).

Foods for Air- and Space-Men

physical environment. During flight, proper foods relieve boredom, ease tensions, and counteract stresses due to space restrictions.

Here's what the Air Force has found: Proper flight nutrition to maintain high human performance is best accomplished through consumption of foods in light, frequent feedings. Moreover, food should be readily accessible, and properly handled under sanitary conditions.

This calls (a) for development of specific non-perishable and perishable foods, (b) food bacteria time-temperature studies, and (c) new, efficient food-servicing equipment.

Emphasis is on foods functionally usable in flight. And the big need is for highly acceptable low-residue and high-density foods of proper nutritional balance.

Security being what it is, the Air Force is keeping certain of its food advances under wraps. But revelations of some now in use and under development give the picture.

Generally, the number of food classes for choice is considerably restricted when shaping menus for preflight and inflight feeding.

This is because of the aim to shun foods high in carbohydrates, fats, and roughage, as well as those, both solid and liquid, that tend to form gas. Due to reduced pressure, gas-volume doubles at 18,000 ft.—and increases to seven-fold at 39,000 ft.

Present selection of foods is considered adequate for the moment. But the Air Force is continuing to develop new ones to overcome the increasing problems.

Since there are many types of aircraft for different operations, there's no single range of foods or single type of package or inflight feeding system to fulfill all needs. Called for is a variety of acceptable, packaged foods that can be easily eaten by flyers. This can require specifying of different foods and servicing devices according to type of craft and mission. *Turn page*

Sky-Feeding Brief — 3 Altitude Ranges

Altitude Ft.	Personal Altitude Equipment	Aircraft Equipment	Foods
Over 40,000	Pressure suit & oxygen, with helmet aperture	Snout Snout 'Lipstick'	Liquids* Semi-solids* Sticks*
15,000 to 40,000	Oxygen mask & oxygen	(None) (None)	Tablets Compact box lunch
Up to 15,000	(None)	Oven (None) (None)	Foil-pack Pre-cooked frozen Food packet Box lunch (5 hr.)

*Experimental, also projected for use in 15,000-40,000 ft. range.

SUPERSONIC GALLEY has complete storage and cooking facilities. It's being developed for several-day serving of 4-5 man crews—in craft hurtling 20 miles high at twice speed of sound!

'LIPSTICK'-TYPE solid-food feeder inserted in pressure helmet. It's proposed for dispensing eating sticks—ground, freeze-dried, and compressed meats and poultry.

Foods and feeding units have been, and are being, developed for aircraft operating in three different altitude ranges requiring different personnel (see chart).

Radically New Foods

Now to the advanced experimental food developments, initially eyeing the mid-range—15,000 to 40,000 ft., requiring oxygen or oxygen masks, and flying, say, the B-47. Being evolved for use here, and in restricted flights, are:

Tablets. These have already been produced in prototype form—1¼ in. dia. by ⅜ in. thick. And a variety of kinds have been made available: Cheese, chocolate butter cream, plain milk, and flavored milks. They're being sky-tested along with a dispensing device. Trouble here: Too much tablet for the mouth to conveniently hold.

Now to the planes operating in the top range—above 40,000 ft. Here, the pilot is attired in a pressure suit (with oxygen) and must feed himself through an aperture in his closed helmet.

But first, this word: The fighter pilot must be ready for combat work after a long-distance approach. Most of the cockpit within his reach is filled with instruments. Thus heavily clothed, he's kept busy flying his craft, and is restricted to his seat. The food he carries must be chosen prior to flight, when he's not hungry.

To meet these and other "tight" conditions takes special foods and feeding means. And educating the flyer to accept this type of feeding is a problem.

Being devised are three specialized types: Liquid, semi-solid, and stick foods, which must be consumed in 'semi-automatic' fashion—*i. e.*, with the pilot handling it with one hand, without distraction from his flight duties. These foods are taken "as is". No preparing, heating, or 'serving.' Now, a look at these types:

Liquid foods. The Air Force is vitally concerned with adequate liquid-feeding techniques, since there's a physiological need for liquids in high-altitude flight (excessive sweating lowers efficiency).

Available are highly acceptable fruit and vegetable juices, with such others as soups, milk, liquefied meat, and various dairy beverages under development.

Highly favorable are prototypes of new comminuted liquid chicken, ham, and corned beef (23-25% solids, prepared in own broth). Cans of these high-caloric foods (6 oz.) are punctured and gravity-dispensed through a plastic tube fitting through a $\frac{5}{16}$-in. aperture in the pilot's helmet.

Puncturing is accomplished with an arrow-shaped cutter, which is built into the end of the feeding tube ($\frac{3}{8}$-in. O.D.). A twist of it seals the unit (rubber-gasket).

Problem: Trying to keep these foods liquid, since they tend to gel.

Semi-solids. Being evolved are high-caloric semi-solid foods carried in collapsible metal or plastic tubes (4 oz.) with elongated plastic dispensing spouts. They're eaten by passing spout through helmet aperture and squeeze-dispensing from tube. These foods are intended to be consumed a little at a time (about every half hour).

Projected here, and showing promise, are comminuted meat items, also confections.

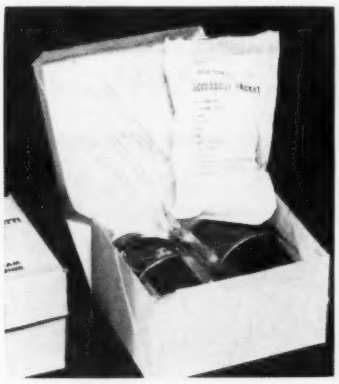
Squeeze-Tube Problems

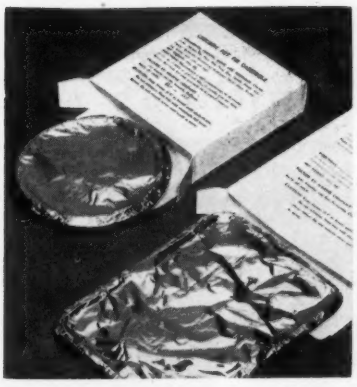
When collapsed, such containers would take up less space than empty cans. But other problems await solution. For example, the metal tubes must be hermetically sealed to withstand heat processing. They must also stand up under rough handling. Suitable lining materials are also requisite.

Being grappled with relative to plastic tubes are such matters as plasticizer migration, gas permeability, bacteria penetration, and moisture-loss.

Stick foods. A lipstick-type dispensing device is the key for use of special concentrated stick foods—beef, chicken, turkey, and combinations of the latter two.

Meats are comminuted, freeze-dried, and compressed into ½-in.-dia. sticks weighing not over 1 oz. Plans are to starch-coat these sticks to prevent possible trouble from food fats





NOW IN USE is such fare as seen here. Left: Boxed meal carries 4 cans and accessory packet, affords variety of 10 meats, 5 fruits, 4 desserts. It doesn't need refrigeration or equipment aboard plane. Right: Precooked frozen meals in aluminum trays and casseroles for large, long-range aircraft. Available in a dozen different menus, they're freezer-stored and re-heated aloft.

getting on the flyer's person or equipment.

Additional research aims at still other striking innovations, such as—

1. A "high-fast" food service, featuring variety menus for 4-5 man crews on craft staying aloft over 100,000 ft., for days instead of hours, and traveling at twice the velocity of sound.

Preliminary studies indicate the IF packets of precooked frozen meals, fresh fruits, eggs, bread, cookies, and leafy vegetables can be used up to 5 days.

Being developed is a galley having electric oven and freezer-, cooler-, and room-temperature storage. Each crew member would prepare food of his own choice from the cabinet assigned him.

2. Manned-missile feeding. The Air Force feels that its efforts toward development of foods for high-altitude use will logically key into the missile-feeding sphere. Research on survival rations thus is "in line." Ultimately targeted are the feeding needs for flights into space.

Explored here is the concept of closed-cycle feeding systems—that is, regeneration of foods as well as oxygen for space flights. This includes the regeneration of CO_2 (expelled by the crew) into O_2 through the agency of single-cell algae.

In the course of the researches, no possibilities are being missed. Future likelihoods of irradiated foods are weighed. Present applications of precooked dehydrated foods are spotlighted. Staples, though more prosaic, are recognized as vital.

Example of the latter would be the stable-food packet, offering diced fruits, nuts, confections, etc. Idea here is to put up these foods in low-cost compartmentized packets, avoiding use of cans. Assured storage life of 6 months is specified.

Nearer the Ground

This brings us to consideration of the food needs in the more conventional operations under 15,000 ft. Already available here are box lunches, food packets, and precooked frozen meals.

Compact box lunch. This sandwich-snack meal is most common. Prepared from a large variety of foods, it's designed to relieve flight strain and tedium. When not too frequently repeated, it's generally well liked.

Put up in a flight kitchen near the operations building, it requires no special preparation aboard the aircraft. Normally, it's eaten cold within 5 hr. after leaving the kitchen.

The carton-packet items weigh about 2 lb. and take up 1.0 cu. ft. Sample menu: Ham and cheese sandwiches, fried chicken, milk, fruit juice, lettuce, orange, candy bar, cookies, hard-boiled egg, olives, pickles, mustard, salad dressing, chewing gum.

It may be noted here that a further box lunch has been standardized for use between 15,000 and 40,000 ft. (see chart). It consists of six menus—three for consumption within 3 hr. after preparation and three up to 20 hr. Features are compactness, protection from dehydration at high altitudes, bite-size components, and ease of eating.

Food packet. This lower altitude, semi-perishable meal is suitable for stock-piling in emergencies. It's the most versatile, and needs no refrigeration or equipment aboard aircraft. Some of its components are more acceptable when heated and, for this purpose, special heating equipment is employed aboard larger planes.

Each packet is a complete meal. And ten different menus, assembled in separate packets, give variety. Packet weight is 1¾ lb. Twenty are put up in a telescopic carton weighing 39 lb. and occupying 1.3 cu ft. of space.

Meal comprises four cans (meat, fruit, bread, and dessert) and an accessory packet (soluble tea and coffee, cream, sugar, etc.). Menus include 10 kinds of meats, 5 fruits, and 4 desserts.

Precooked, frozen meal. This was designed to offer several highly acceptable hot meals for large, long-range aircraft. Put up in expendable foil tray or casserole, covered with a crimp-sealed foil sheet, it requires refrigeration, storage, and an oven aboard plane. Latter is special B4 unit that reheats meal in ½ hr. (from 0F. to 160F., internal).

Each tray weighs 14 oz. Eleven are packed into a 10-lb. carton taking up 0.6 cu. ft. Each casserole weighs 13 oz., and 15 are packed into a 13-lb. carton, also occupying 0.6 cu. ft.

Now available are 12 menus—10 tray and 2 casserole. There are 2 breakfast menus and 8 tray dinners. These meals include, along with "fixings," roast turkey, Swiss steak, beef patty, chicken, pot roast, tenderloin steak, pot pies (chicken and beef), waffles, and omelet. Items which must be added are bread, drinks, and dessert.

Foil-pack feeding system. This is now in use at two bases, where items are initially semi-cooked prior to flight. Offered are a wide variety of foods in foil containers. These are refrigerated-stored aboard the craft, later being re-heated in an electric oven with minimum preparation. The foil trays are used as dishes, being served to the crew members on disposal lap trays.

Above article is based on information furnished to FE by Lt. Col. W. D. Nettles, Air Force Liaison Officer, Quartermaster Food & Container Institute for the Armed Forces, QM Research & Engineering Command, Chicago.

"Supervisor Training Is No. 1!"

So emphasizes Personnel Director Bechtold—interviewed here by FE to bring out the salient points of Lance's A-to-Z system . . . Program moves men "who have it" right to top. Pays off in smart staff, maximum morale, highest performance, most favorable selection

Lance Personnel Director A. L. Bechtold

. . . Spotlights training factors that ring the bell

WHY DOES Company X just drag along, its personnel sluggish, plagued by low morale—whereas Company Y constantly performs at high speed and efficiency, its workers "right on the ball"?

More often than not, the difference lies in the organization's attitude toward its employees—particularly in respect to training and upgrading.

Outstanding as a "Company Y" is Lance, Inc., of Charlotte, N. C. This concern, of more than 800 employees, manufactures a broad line of lunch and snack items—various cracker sandwiches (such as peanut butter, cheese, malted milk), bagged nuts, cakes, candies (bars and pops), saltines, and the like.

Predicated on such an enterprising line of goods, the Lance operation requires the same salient, topflight enterprise in its workers. And so, some 15 years ago, the company launched a very liberal training program to afford its employees all the "tools" they could use to get ahead.

The handsome returns that have been paid demonstrate that this plan certainly blueprints a pattern rich in pointed 'hows' and 'whys.' Hence FOOD ENGINEERING sought out Lance Personnel Director A. L. Bechtold to get the story—

FE—Is it true that persons on any Lance supervisory level—from top to bottom—may take advantage of your training opportunities?

Mr. Bechtold—Yes, our program is run for all in supervisory capacities—also trainees are eligible, since we hope they'll eventually work up to supervisory posts.

FE—Tell us why you hold such broad teaching to be vital.

Mr. B.—The reason? Well, our business is highly competitive. Further, raw-material costs have continually gone upward. Yet, we're still selling our packages at the pre-World War II prices. So with the high pressure of such factors, we deemed thorough training of supervisors to be No. 1—in order that they'll not only be tops on their own jobs but also well acquainted with changing conditions and times.

FE—We gather that employee advancement is the objective. But to what positions? And are there other aims, too?

Mr. B.—Through our program, we've moved individuals from first-line jobs up to posts of foreman, assistant department head, department head, assistant superintendent, and superintendent. Besides this, we feel another objective is to give these persons all the modern means possible so they can do a better job of supervision—with an eye, too, for the next higher level.

FE—How do you select these persons?

Mr. B.—First off, we use a number of approaches to instill prospects with a desire to learn more—thus encourage them to request the training. We specifically discuss it with some. All our plant people are well aware of the opportunities, so persons constantly come to me to inquire. I explain what the extra work involves, telling them it will mean sacrificing some of their leisure time.

From among these people eligibles may be chosen by the Executive V.-P., V.-P. Production, Plant Superintendent, Assistant Plant Superintendent, or Personnel Director. We try to evaluate the requests relative to the individual, his particular function, length of service, and potential with our organization. Various factors may be considered. And, finally the groups are formed.

Wide Range of Subjects

FE—just what does the training cover?

Mr. B.—It comprises a wide line of subjects offered through a broad variety of means—in-plant training, American Institute of Baking and Biscuit Bakers Institute courses, mail studies such as offered by International Correspondence School, also studies through Charlotte and Queens College.

Besides the specific technical subjects, as offered by AIB and BBI, the workers may take general machine shop practice, blueprint reading, problem trouble shooting, and the like. There are also public speaking, business English, accounting, communications, and human relations.

Further, we conduct special programs—for example, our "World We Live In" series.

FE—You mean general-interest programs?

Mr. B.—Right. For instance, in our "World" programs, run in the evening, we recently had a TV

executive, a newspaper editor, and state and federal legislators come in to talk to our personnel about their fields. Among other subjects covered earlier are: How our state department of labor operates, how to invest in stocks and bonds, operations of the state unemployment compensation commission, tips on drawing up personal legal papers–and many more.

FE–You're certainly comprehensive. Is all training guided in the plant–by Lance executives?

Mr. B.–The studies, of course, are conducted partly in the plant, partly at the colleges, and partly in the home–the correspondence courses. As for the administration of it, I handle that in my capacity of Personnel Director, along with my assistant, W. C. House, Jr. And collaborating in it are Production V.-P. Glen G. Rhodes, Plant Superintendent L. O. McCullough, and Assistant Plant Superintendent C. H. Beam.

FE–What kind of a schedule have you set up for the training?

Mr. B.–The in-plant courses are on company time–about an hour once a week. Some extend for 8 weeks, others 10 or 12. As for the college studies, they're scheduled one or two nights a week, and they may run 1 to 2 hr. each time.

FE–How many persons get into the program over the year, and what is the average size of a group?

Mr. B.–We had some 75 men, from various levels of supervision, taking our special training during the past year. The plant groups run 12 to 14 persons.

Values Gained

FE–Now the prime question: What benefits has the program paid?

Mr. B.–Our results have been excellent. We've thus uncovered much top talent. Let's take some cases: One of our foremen started the training in '46, and he's participated in some course every year since, both on company time and his own–in-plant, college, and correspondence. In the course of it this man has been promoted from foreman through to department head. And just recently he became Assistant Plant Superintendent. He puts it this way: "The very first courses I took made me realize my inadequacies–made me feel that if I were to make the necessary progress I'd really have to study to improve myself. And so I did!"

I think that's a very pointed illustration of the value of our training program. And another example is our V.-P. Production–a man who made his way up, over 15 years, from a line-supervisor job. He took many courses on various subjects, also widely participated in seminars, like those of American Management Assn.

Further, during the past few years he himself has conducted training courses within the organization. His subjects have been highly diversified. He ran one course, for instance, for all our department heads. And particularly popular was his "What To Do" program–letting individuals take a hand at solving problems.

You can see from this that our training is an aid–a tool–for supervisors who are bent on promoting and building themselves. You see, unless they take hold on their own, it's difficult to advance them. It means they're not ready yet for added responsibilities.

"Put Me Down!"

FE–Specifically, what kind of reactions do you get from trainees?

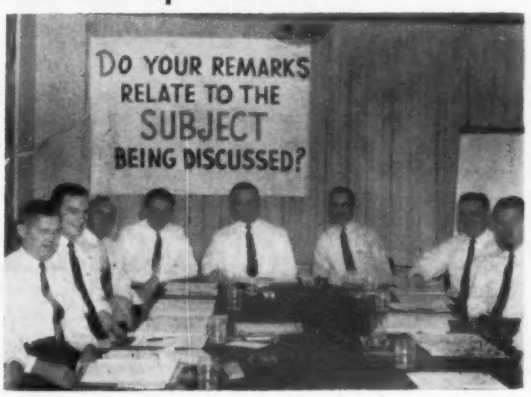
Mr. B.–They are really behind it. Here are some sample remarks from their comment sheets: "That last course was tops! Be sure to put me down for another next year." . . . "I never realized, until I took this course, how important it was for me to grow in experience and knowledge." . . . "Knowing what I now know, I'd really have been glad to pay for the course myself." . . . "That last instructor really 'set me on fire'! I now want to 'go places,' and I want to do what it takes to get there." . . . "Would it be possible for me to take the public speaking course over again? I know I can get even more out of it the second time."

FE–And what's said about it by line-management men and administrative executives?

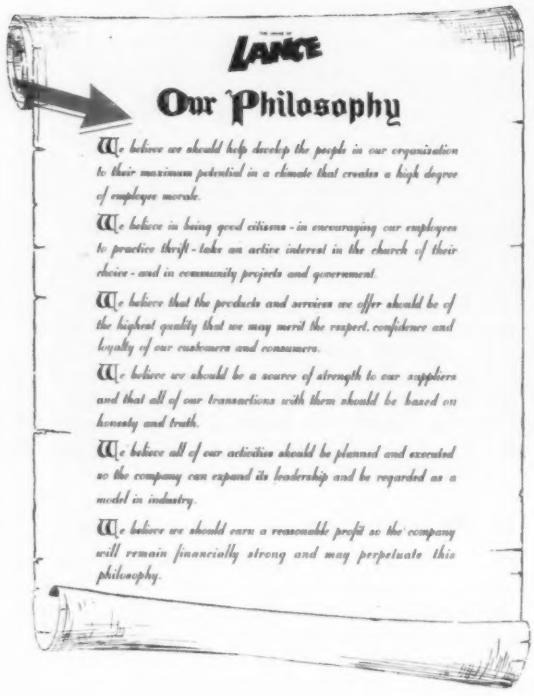
Mr. B.–Well, I think the views of the superiors is well reflected by a superintendent's comment. Referring to one of the men taking training, he said: "That fellow certainly has grown since getting into the pro-

NO DULL, STULTIFIED training here! Sessions are conducted with spark–as reflected in faces of trainees leaving Lance's "Little Red Schoolhouse."

Run With Spirited Ideas



"ON TARGET" TALKING is rule that keeps seminars right in groove. Participants are ever reminded by prominent banner that doesn't mince words.


LANCE
Our Philosophy
We believe we should help develop the people in our organization to their maximum potential in a climate that creates a high degree of employee morale.
We believe in being good citizens - in encouraging our employees to practice thrift - take an active interest in the church of their choice - and in community projects and government.
We believe that the products and services we offer should be of the highest quality that we may merit the respect, confidence and loyalty of our customers and consumers.
We believe we should be a source of strength to our suppliers and that all of our transactions with them should be based on honesty and truth.
We believe all of our activities should be planned and executed so the company can expand its leadership and be regarded as a model in industry.
We believe we should earn a reasonable profit so the company will remain financially strong and may perpetuate this philosophy.

CERTIFICATES TESTIFY to workers' progress. Here, Dean Davis, special-education director of Charlotte school system, makes presentation to Employee Carol Civil, who's just completed special training in machine shop practice.

◀**ACCENT ON THE INDIVIDUAL** is No. 1 (arrow) in Lance's farsighted 6-point philosophy.

gram—in his attitudes, his desires, and the way he conducts his job."

Further, our administrators have noted how specific men have advanced in judgment due to the courses. Thus, they feel the company's investment in these individuals has been well justified—paid great dividends.

Our program, you understand, ties in with our basic scheme of training men who are supervisory timber.

FE—How does that plan work?

Mr. B.—In his initial three years, the trainee is assigned, for varying lengths of time, to different Lance departments—rounds him out with a good conception of the functions of the entire organization. After that, he gets a chance to select the department he's most interested in and best suited for—the department in which he wants additional information and training.

In my own 15 years with Lance, I've known of no one moving to supervisory level who hasn't gone through our various stages of training prior to being given the added responsibilities.

FE—What's been the overall effect on turnover, absenteeism, general morale?

Mr. B.—It's hard, naturally, to measure the exact role of the program relative to such things. But I can tell you that turnover back in the tough period of the war, around 1943, ran 5-6%, whereas today it's a mere 0.5%. And absenteeism, which was then around 6-7%, is now only 2%.

And morale today is extremely high—because practically everyone knows that we build all levels of supervision within our own organization. The program has promoted strong leadership in our supervisory staff. That pays off in overall stimulation.

FE—All this must also have a very salutary effect on the local community, right?

Mr. B.—Yes, very definitely so. We are one of the larger employers in our area, and so the weight of the example we set is considerable. A number of smaller companies have followed suit relative to training. Also, our broad training has, I believe, influenced our men in their wide participation in community projects.

FE—How generally, do you publicize the training to the workers—via the employee magazine, bulletin boards?

Mr. B.—Mostly we let word-of-mouth do it. The program is that well established and that well accepted. As I was saying, the supervisory and trainee people are personally apprised of the training-course opportunities. And you might say that the announcements of promotions 'tell the story.'

FE—How are such announcements made?

Mr. B.—In our company publication, and often at plant meetings of all the employees, presided over by our V.-P. Production. Having worked in all the departments, each trainee becomes well known. Hence, a report of his promotion interests a great many of our people. They like to know 'where he has gone and what he has done.'

FE—Could you tell us the approximate dollar investment Lance makes in this training?

Mr. B.— I'd say that on the average our yearly outlay runs $100-125 per person in the program.

FE—Have you estimated the gain—financial and otherwise—that Lance thus realizes?

Mr. B.—That's hard to measure in dollars and cents. But our training program has certainly been of very high value to us. It's paid handsomely in upgrading various employees, establishing fine employee attitudes, and improving organization performance.

Also, it has helped to build the high respect our organization enjoys—has won much goodwill for Lance in the community. People have thus come to know that the individual is important with us and has an excellent opportunity for advancement.

Accordingly, hardly a day goes by that we don't have a number of persons coming in wanting to work for us. Thus, we're afforded a grand selection whenever we need people. —*End*

Emery NEWS

WEIGHING SYSTEM

BIN, TANK AND HOPPER EDITION No. 8

Covering design, development and application data on Emery Weighing Systems for industrial applications.

AMAZINGLY SIMPLE EMERY WEIGHING SYSTEMS SPEED CONTROL OF CONTENTS IN MULTI-TANK OPERATIONS

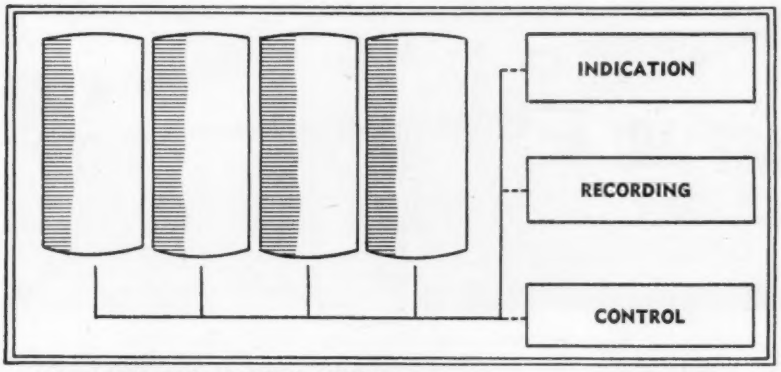
RUGGED EQUIPMENT OF CLOSED HYDRAULIC SYSTEM GIVES MAXIMUM ACCURACY AS WELL AS PRACTICALLY MAINTENANCE-FREE PERFORMANCE.

The key to the renowned accuracy, repeatability and maintenance-free operation of the Emery Weighing Systems is the unbelievable simplicity of the sturdy Emery Hydraulic Load Cell. Built with the precision characteristic of all top-quality instruments, the Emery Cell incorporates the ruggedness which makes it ideally suitable for rough industrial usage.

In effect, the Emery Cell is a transducer which converts load into proportional pressures which, in turn, are used to operate suitable instrumentation. The Emery Load Cell nullifies the use of complicated electrical circuits and electronic devices. Any man in your shop can understand and operate an Emery Weighing System.

In multi-tank operations, the Emery Weighing System is particularly applicable. Because of the simplicity of its design, it is usually less expensive than the more complicated weighing systems. Yet, in use, it provides uncanny accuracy and repeatability and all tanks can be weighed and controlled from one control station.

Whether you want simple indication, recording, combination indication and recording, simple or complex control, or a variety of printed forms, investigate the possibility of using the usually less expensive and easily the most simple tank weighing system available today.



WHAT DOES YOUR PROCESS REQUIRE?

Is simple weight indication adequate? Do you need recording? Could you use printed records? Do you want automatic control? All of them are readily available to you either at the tanks or at a remote station.

BUY SIMPLICITY . . .

When you buy a tank-weighing system, buy the readily understandable, easy-to-operate, maintenance-free, Emery Weighing System. Don't burden your processing operations with complex, hard-to-handle, electronic circuits and devices. **Stay simple . . . buy Emery!**

FOXBORO

Quality Instrumentation

One instrument manufacturer whose products team up effectively with the simple design of the Emery Load Cell is The Foxboro Company.

Shown here is the well-known Foxboro Circular Chart Recorder with an Indicator Dial. This instrument is eminently suitable for multi-tank installations.

Our engineers will gladly discuss the application of Foxboro instrumentation or instrumentation of any other top quality manufacturer to your Emery Systems.

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The vapor-proof, permanent insulating qualities required for efficient, low-temperature storage were supplied by FOAMGLAS.® This insulation was installed around the entire framework of the building (see top picture), providing a rodent-proof and incombustible closure. And over this were bolted Butler metal roof and wall panels to provide a durable, weather-tight exterior.

Plymouth Cold Storage, Inc., ordered this unique building from the nearby Butler Builder—and here is what they discovered about its advantages over other types of cold storage construction.

The new 250,000-cubic-foot plant was ready for occupancy four months ahead of schedule, and cost less to build (compared to traditional construction). It provided 20% more usable space—*and*, required ⅓ less cooling capacity than a cold storage building of this cubage normally requires!

How did they save so much construction time? Well, first of all, construction is fast and economical with a Butler building because Butler ships from stock the mass-produced, pre-engineered steel structurals and metal cover. Construction is actually a fast bolting job.

The clear-span construction and truss-free gable area provide maximum use of inside space—give Plymouth 20% more storage area.

For full details on this new system of building efficient, more-economical-to-operate cold storage plants, contact your nearby Butler Builder. He's listed in the Yellow Pages under "Buildings" or "Steel Buildings." Or, write direct.

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Ole Sage Episode

"So," said Ole, "Batt really wouldn't have taken it on the chin like this—which brings up a point pertinent to the role of company publications."

How Pitch *Your Facts* in the Plant Paper?

SEIZING A BREAK in the table talk at the luncheon meeting of the Guff & Gripers, Si Worth said: "I've got some pointed questions on this matter of putting straight-shooting facts in company publications."

Ed Strong laughed. "Si's working over our Zenith mag, and he's looking for help. Okay, Si, give us a run-over on what's bothering you."

Si shot a glance at Ole Sage. "Well, Ole seems to think an employee mag shouldn't dodge controversial issues—said we should 'lay it on the line' with real facts about company plans, policies, and ideas. I want to know why—and how—do you handle the 'hush-hush' subjects."

Batt Bulwark, works manager of Mull & Mull, banged his fist on the table. "Suicide—corporate suicide," he barked. "That's what Ole's advocating. I'm agin' company publications. But I say if a company is so bent on wasting money that way, then it should only print what's harmless—chit-chat about the workers—and skip company news and views."

"What's wrong with company news and views?" asked Barney Hasbrook. "The company pays the bill."

"It's propaganda," Batt snapped. "And the world's already overloaded with propaganda."

"Well," commented Ole, "that word 'propaganda' sure takes a beating nowadays—even though it seems to have had a clean, religious origin some 300 years ago. Then it was applied to the education of priests for missions. Today, propaganda means an effort to spread doctrine-type information—but it can mean the good type as well as the bad."

"Well, I'll be," Batt shook his head in disbelief. "I always thought of propaganda as just lies. But I still say, let the company keep its views to itself."

He went on: "Anyhow, the way I see it I have a right to expect my workers to get out the production, do the job they're paid for—or else!" Again he banged the table. "But that's *all*."

"Let's have your views, Ole," suggested Milt Sorenson.

"Many agree with Batt," Ole admitted. "But there's another viewpoint, and to bring out this other side, I'd like to ask Batt a few questions."

"Always the target," said Batt, grinning, "but go ahead, shoot."

"Well," Ole began, "what would you do, Batt, if while you were sitting in your office a worker stomped in, swung on you with a right cross, followed with a left jab, then a straight one to the jaw, knocking you to the floor, and finally jumped on you with both—"

"Wait a minute!" bellowed Batt. "Nobody hits me three times while I'm sitting down. Believe me, *he'd* be the one on the floor. I didn't come up the hard way for nothing."

"You see, fellows," said Ole, smiling, "Batt believes in self-protection

IVAN C. MILLER
"Food Engineering"

"'Hands off' is a mistaken policy when employees are bombarded with biased views and 'facts.'"

—defending himself against attack. So he really wouldn't have taken it on the chin like this—which brings up a point pertinent to the role of company publications."

"What role?" demanded Batt.

"I'm getting to it," Ole said. "First, one more question." Turning to the group, he asked: "How many of you read union publications?"

Only two raised their hands. And Batt boomed, "Not me! I used to glance at them. But they made me so mad I finally decided I'd never look at another. Pack of lies nobody'd believe!"

Ole said mildly: "At any rate, the union papers are pushing union *opinions.*'

Batt sputtered. "They holler for more government regulation favorable to unions. More 'protection' for workers. Higher taxes on business and upper incomes. Lower taxes on workers' incomes—down to none at all. More and more government spending!"

"Even so," volunteered Barney Hasbrook, "I'd say we must be fair about all this. Labor *does* have the right to present its views to its members, whether or not we agree with those views."

"Correct," approved Ole. "And that makes my point. The company also has the right to give *its* views to its employees. In fact, it has an obligation to present the other side of controversial issues. 'Hands off' is surely a mistaken policy for a company that sincerely believes its employees are being bombarded with views contrary to the best interests of both company and employees, along with biased 'facts' to support those views. And here, I know of no better place to fight back than in the company publication.

Milt spoke up: "So much of what's in those union papers is extravagant, exaggerated, unreliable—I can't see how such stuff can convince the members, even if they read it."

"They read it, all right," emphasized Ole, "if for no other reason than the appeal of the subject matter—the strong play on their fear of unemployment. The papers report unemployment and forecast unemployment. The union's skilled journalists use this fear of unemployment to urge members to demand and vote for the union's legislative programs."

"Let's get back," Si Worth interjected, "to this matter of what controversial issues should be discussed."

"Study the union publications," Ole said, with a wave of his hand. "Examine those read by your own workers, and those read in other plants in your area. They clearly show the subjects that interest your workers. And here you'll find spelled out the various twisted facts and attitudes that the company should correct in the minds of its employees."

"Maybe this is a delicate question," Si said, "but just who can you trust to write on these ticklish issues?"

"Well," replied Ole, "here again you can take your lead from the union papers. They employ well-trained experienced writers. 'Go thou and do likewise.'

"But," he went on, "remember, too, that management first must wholeheartedly decide on its policy. Then the editor must promote it with a grass-roots, bread-basket, down-to-earth approach. Management must support him in procuring journalistic aid. For this calls for more skill than just writing births, weddings, and 'enjoyed-by-all' Christmas parties.

"And perhaps hardest of all, psychologically, is this: Management must stand by without interference while the journalist presents facts and views with the language and ways and means of his trade—even though these may be at odds with the management's ideas of proper wording and method."

"That brings up a point that hits my area," remarked Bertram Barnastian. "Our company's small. We're growing, but we're still small. Nevertheless, we're considering a company paper. So, what do you do about getting this top flight publication performance when you can't afford experienced, competent journalists?"

"In most industrial areas," Ole explained, "part-time services of capable writers generally can be obtained. Call on your local newspapers, particularly weeklies, to help you locate such spare-time talent. Also, ask the journalism schools for suggestions."

Si queried: "I've another question relative to these facts for the company mag: Where are you going to get them?"

"Well, your good journalist will know where to locate the facts he needs," Ole explained. "He will consult government publications, such as those of the Commerce and Labor Departments, and literature supplied by industry and trade groups, such as National Canners Assn., Grocery Manufacturers of America, Master Brewers Assn. of America, and so on.

"Other dependable sources are national groups like American Management Assn. and National Industrial Conference Board. And in particular there's the business and industrial press: FOOD ENGINEERING, *Business Week, Harvard Business Review,* and others, are packed with pertinent data of this type.

"Most of that's heavy going," grumbled Batt. "And some of it's one-sided. Don't believe half of it, myself."

"Well, your competent journalist," said Ole, "won't stick to abstract, heavy, over-intellectualized treatment of subjects. And his handling of free enterprise, the American way, spiralling taxes, Washington encroachment, and the like, won't be the old 'boilerplate sermon' sort of thing.

"Instead, he'll make these issues down-to-earth and home-spun. He'll localize them, and build them around the company itself. He'll point out how they apply to and benefit your employees."

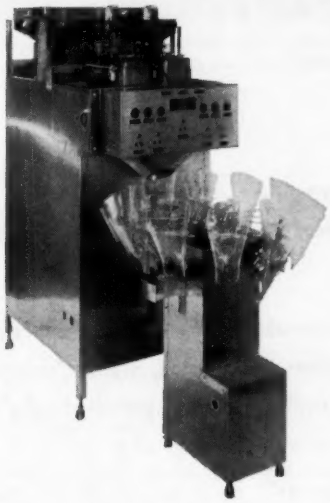
Batt arose. "Ole," he said with mock solemnity, "I don't really know if you've sold me on your 'employee rags' or not. I'll have to think about it. But I do know I've got some pressing problems back at my plant. Gotta get back to 'em."

"I'll wrap it up, then," said Ole: "Everyday, your employees are forming new opinions and changing old ones about the things they read and hear—not only on national issues but also about their company and its management.

"So you're missing a golden opportunity if you don't use your company publication to give them *honest facts* so that they may form intelligent opinions. You may thus prevent actions that might seriously injure their own welfare as well as that of the company." —*End*

From Soup...

...To Nuts



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IN MAMMOTH RETAIL OUTLETS, such as this Safeway store, you build mass sales. But getting your products onto these shelves requires scientific selling gaged to today's fast-changing marketing.

SELLING APPROACH: Key to

Here's 'inside' on Safeway's program—showing what you must do to get sales results . . . Flood of new items, crowded stores, stress 'scientific' approach . . . Vital are product data, promotion plans, point-of-sale displays

WITH CHAIN and supermarket outlets accounting for more than 60% of today's retail food volume, you can't afford to fumble the ball when selling them your products.

But garnering the all-important shelf space for your line is only achieved by a carefully planned-in-advance selling program shaped to prime trends and requirements in the retail field.

One of the most important trends has been the shift in purchasing responsibility from the individual buyer to the buying (or new products) committee. This transition, which reduces face-to-face selling and emphasizes scientific selling, has broad implications for your marketing program.

C. R. HAVIGHORST
Senior Associate Editor, "Food Engineering"

Here's a case study of how to sell products and promotions to the nation's second largest chain—Safeway Stores(1957 volume: $2.1 billion). Tips picked up here will help your selling approach to the other big volume chains.

Safeway makes a good laboratory example because of the significant operations and merchandising changes carried out by Robert A. Magowan, president and board chairman. Since picking up the reins, Magowan has—

▶ Slashed the number of Safeway's own brands from 210—which, because of package sizes, called for 600 different labels—to 100. This has opened up considerably more shelf space for your products.

▶ Abolished the central buying office system (except for staples like sugar and flour, as well as private label merchandise) and made each of the chain's 23 divisions responsible for returning profits and stocking stores with products "the customer wants."

This creates entirely new sales potentials for manufacturers, especially those with strong regional brand loyalty. Heretofore, the central buying office was primarily interested in processors who could supply the needs of all the divisions, as well as foot promotional budgets big enough to support such extensive distribution. Now, division buyers are interested in the small lot orders of regional or local producers as well as the offerings of the larger-size manufacturers.

▶ Made buyers more receptive to manufacturers' new product and promotion offers.

"We want to hear every reasonable sales proposal," says Vice-President William S. Mitchell, top supply executive. "We're singularly interested

END-ISLAND DISPLAYS help single out your product—catch consumer's eye as inviting break from row-on-row shelving. Special promotions like this must be carefully related to in-store conditions.

Winning Shelf Space in the Chains

in presentations made by knowledgeable salesmen. Only in this way can we increase our merchandising effectiveness and keep abreast of the changing marketing picture."

In other words, the door is open—but your portfolio must stress the profit-potential of what you have to offer Safeway.

A Trio of Specifics

In preparing your selling approach to the chain, you must consider: (1) The important details Safeway wants to know about your product, (2) how to gear your merchandising campaign to that of Safeway's, and (3) the in-store aids that will get maximum use in the chain's outlets.

One of the first things you have to know, of course, is Safeway's buying and merchandising methods.

In the chain's new set-up, each of the 23 divisions is staffed with a head buyer and two or more assistant buyers. This is considered adequate personnel to handle a normal flow of sales presentations.

Besides the buyers for dry groceries, there are usually buyers for meat and produce. Their offices are open five days a week and, except when the buying committee meets, they are available for sales appointments.

Behind the adoption of the committee method is the chain's conviction it's the best way to coordinate buying with merchandising. The two functions are considered integral parts of a profit-building operation.

Under the old purchasing system, the buyer frequently had to delay his answer to a seller's proposal while he held separate consultations with other department heads. Now, under the committee method, all the concerned parties are brought together for exchanging views and making quick decisions.

The group method benefits your salesman, too, since it permits the buyers to hold more interviews—a virtual necessity today considering the many new items appearing each day and the number of salesmen representing them.

The average Safeway buyer interviews 10 salesmen a day. Multiply this by 3 buyers for one week—an average of 120 interviews—and you can see why the large chain store organizations favor this method.

How do you get the committee to OK your product? Here's the procedure:

First, prepare a sales presentation summarizing the key facts about your product (see checklist, page 64). Besides the information contained in the checklist, the buyer needs other normal data, some of which will be listed on a form you have to fill out.

This form covers such areas as: If canned goods, what is the "swell" allowance? What are the FOB and shipping points? Is the item fair-traded or pre-priced? Is the product guaranteed against price decline, and if so, for what period of time? Is the sale guaranteed? What other products, if any, do you supply the chain?

Of course, the buyer will want written assurance that your offer—prices, terms, and other conditions—meets legal requirements, and is available to other purchasers on proportionately equal terms.

By appointment, your salesman presents all this to the buyer.

At regular meetings, the division's buyers study all sales offers, analyzing the factors that justify presenting a product to the committee. (It

7 Facts Buyer Wants on Your Product

There are two primary aspects to remember when presenting a new product to a chain like Safeway:

A. More than 6,000 grocery products are shown to chain buying committees each year, and

B. The buyer now acts as your representative when your product is up before the buying committee.

This means that your new product faces stiffest competition. To gain a competitive edge, you must give the buyer all the important facts he needs so he can present the strongest case for your product before the committee.

These seven points cover the information Safeway buyers want about your new product:

1. Quality and grade (and whether samples are available for cutting and/or evaluation).

2. Container size, pack, and weight.

3. Price per unit, discounts generally offered (cash, trade, and quantity), and net cost.

4. Current retail price in competitive stores, and stores handling it.

5. Whether it has been test-marketed and, if so—
In what national market areas (how do these compare with Safeway's market)?
In what type of retail stores (are they similar to Safeway's units)?
What promotional support was used?
What sales volume resulted?
What is estimated turn-over?

6. Whether it is a special introductory offer. If so, then what are—
Cost bases and discounts offered.
Kind and amount of co-op promotional allowances.
Extent to which product will be exploited in Safeway's area, media to be used, and duration of promotion.
Plans for promotional continuity.

7. Whether product is comparable in cost and quality to a similar item now in stock. If so—
What is significance of your product?
What promotional media and point-of-sale material created consumer demand/acceptance for the similar item?
Is promotional program for new product equal to or greater than that of similar product?

may be noted here that to Safeway a "new item" is one not presently stocked, and a "new product" is one just developed and currently being placed on the market.)

If your presentation shows that your product has consumer acceptance, your marketing program is potentially effective, and your offer in line with Safeway's operations, the buyers will submit it to the committee.

In addition to the buyers, the committee usually consists of the division or zone manager, price manager, retail operations manager, and the advertising manager. A second glance at these titles shows that—contrary to what it is now called—the group is primarily a **merchandising** committee.

True, only the product buyers are "specifically in that category." However, the other men handle merchandising functions. Acting together, committee members base their decisions on their experienced estimate of how fast your product will move off store shelves, and at what profit.

Knowing the kind of offer in which committee members are interested, then presenting it properly, are the first two important sales-steps that will sell buyers and "the invisible men" on the committee.

Chain store buying, like so many other marketing decisions once made on speculation, is now a realistic methodology. It depends less on intuition, more on decisions by a well-trained management merchandising-minded group.

On the surface, it may look as if the committee method has reduced the art of salesmanship to that of selling through an interpreter. But this isn't true. What actually happens is that your sales offer goes through a "brainstorming"—in which each committee member gives his opinion on whether to buy or reject.

What this means to you is this: Your salesman must be better trained and more knowledgeable than ever before. The salesman whose presentation spells out all the pertinent details stands a much better chance of success than his competitor who has to "call his office" for information that was left out of the proposal.

Buyer as Your Salesman

Since the buyer is your representative at the committee table, it's obvious that he must have all the important facts concerning your offer. Thus equipped, he can shape the facts to the varied responsibilities of the other committee members.

While a sales presentation is normally predicated on a marketing program and the product's ultimate profit-return, it should also include specific, detailed information slanted toward the merchandising function. If you have given the buyer the necessary information, he can aim it at the merchandising interests of the committee members.

The Big Sales Hurdle

Among the other committee members, the division manager usually acts as an arbiter in case of close disagreement as to purchasing. The real balance-wheel is the retail operations manager—who is usually your most difficult sales hurdle.

His broad responsibilities cover the logistics and administration of individual store operation. He has an influential decision as to whether a new product, a deal, or other type of product purchase or promotion, will ring up profits on cash registers as well as fit in with the division's merchandising plans.

The retail operations manager concedes that merchandising ground rules must be flexible to meet price competition and the many other factors of today's constantly changing retail picture. Yet, because his first responsibility is to produce a net profit, he's the first one to boot a shelf-warmer out of inventory. The "hot" low-profit item he endures in

pained patience, knowing that it brings in the customers.

He has a rough working guide by which to evaluate profit performance of the different items in the store (see box at right). If the sales volume and profit of your product is above the norm, stress this in your presentation.

Should the committee shun your product, there's one other way you can get into the store—the "forcing" method. That is, you generate such an amount of consumer demand, through giveaways and similar premiums, that the retailer will have to stock your item or risk having customers go to a competitive store to buy it. The financial hazards of this method, however, are obvious.

Don't Scatter Promotion

Assuming that your product has earned shelf space on its own merits, the next question the committee wants answered is how you're prepared to get the item moving off store shelves and into shopping carts. Cooperative advertising and promotional plans are the manufacturers' merchandising tie-in with the retail stores. Formerly, this was accomplished simply by buying space in the retailers' weekly newspaper ad and placing point-of-sale material in his store. But today's complex marketing—with its keen competition, parade of promotion offers, and avalanche of new products — has changed all that. Briefly, there are now more offers than retailers or facilities to handle them.

The normal merchandising procedures you follow at Safeway begin with the cooperative advertising-merchandising contract.

Aside from being a legally acceptable instrument, a proposal should describe the going rate of payment for not more than two promotional aids. If, in the promotion of a single item, more than two aids are to be offered, it's best to make separate contract proposals for the others.

While co-op contracts, like purchases, are decided upon by the merchandising committee, it is the price-maker who is responsible for their subsequent commission. He also makes the initial selection of items to be featured in the weekly ad (subject to committee approval).

But, he faces the problem of completing the terms of a hundred or more contracts each month. So it is far simpler, for his operation, if contracts are easily classified with only two specific requirements.

In fact, all too often the broad terms of an all-inclusive, wide-open co-op contract may result in a disservice to the manufacturer.

This is especially true if the selection of several promotional requirements are left up to the retailer. It's entirely possible that he may select the one that does not do the best selling-job for you but, at the time, is easiest to fit into his weekly program. You can avoid this possibility by studying the retail units in a division for the two best methods to promote the sale of your product, and then specify them in a two-provision contract.

Although co-op promotion revenue is of competitive significance, it is of small importance to Safeway's main effort in effective retail food advertising. Instead, the price-maker and the advertising manager are primarily interested in advertising items that will draw the most customers into the stores.

To achieve this end, they closely coordinate their selection of items to be advertised with seasons and holidays as their planned "theme."

Like food manufacturers, Safeway is acutely aware of the value of appetite appeal and capitalizes on it by illustrating these theme-heads with suggested recipes, food combinations, seasonal and holiday foods. They occupy as much as a third of the total ad space (usually dominating the full page of a newspaper). Themes are developed by the advertising manager and are then approved by the merchandising committee.

Tips on P-O-S

Your cooperative advertising, supplemented with your own promotions, is designed to get the customer

Product-Profit Needed to Justify Space

Space management is vital to chain buyers today—for it tells them whether a product is returning a profit commensurate with the space it occupies.

One way of computing the value per lineal foot of shelf space is based on the capital investment and stock required for a new store.

Here's an example, based on today's construction and merchandise cost:

TOTAL COST OF RETAIL FACILITY
($35,000-$55,000 weekly sales)

Specifications:	
Building	18,500 sq. ft.
Shelf space	3,589 lineal ft.
Refrigerated cabinet space (not including meat and produce)	30 lineal ft.
Adequate parking space	
Facility Cost:	
Building and parking lot	$260,000
Property	90,000
Equipment and fixtures	110,000
Total	$460,000
Inventory:	
Four weeks supply	$157,575

INVESTMENT PER LINEAL FOOT

Capital investment	$128.00
Inventory	44.00
Operating Expense*	.25
Total	$172.25

* Operating expense includes profit, taxes, payroll, supplies, utilities, and depreciation.

Needed profit per foot: Based upon retirement of capital investment, defraying of operating expenses, and making a profit of between 1-2% on dollar sales, the required gross weekly profit per lineal foot (for grocery products only) is estimated at $1.40. A further estimate of $2.00 would generally cover all store departments (including meats and produce).

How Taylor put Nicolay-Dancey . . .

IN THE CHIPS!

INDIRECT HEATING SOLVES SPOILAGE PROBLEM FOR POTATO CHIP PRODUCER

Problem: Nicolay-Dancey, Inc. of Detroit, Michigan knew that the high quality of their cooking fat was not being preserved by conventional fat heating methods. In addition, they occasionally lost thousands of pounds of fat because of the inherent hazards of direct heating.

The problem was solved by a method for *indirect* heating of the cooking fat. In the new system, it is circulated through a heat exchanger, where it is heated quickly to a carefully controlled cooking temperature, and circulated back to the vat.

And the keystone of this indirect heating system is the Taylor automatic temperature control system, which automatically controls both the temperature of the cooking fat in the vat, and the temperature of the heat transfer fluid in the heat exchanger.

The result for Nicolay-Dancey has been uniformly high quality of the product, and excellent operating efficiency. Further proof of their satisfaction with this system is the fact that it is being duplicated in a new plant at another location. To find out how we can be helpful to you, see your Taylor Field Engineer, or write the Taylor Instrument Companies, Rochester, N. Y., or Toronto, Ontario.

Taylor Instruments
MEAN
ACCURACY FIRST

VISION · INGENUITY · DEPENDABILITY

into the store. Once she's there, your point-of-sale material should bring your product to her attention.

At Safeway, posters must coincide with the chain's merchandising philosophy – i.e., that customers are shopping for food items for a planned menu. Hence, in-store posters that feature product name, and not brand name, are preferred.

The chain concedes that this method of copy arrangement is contrary to the manufacturer's interest in promoting his own brand. But it points out that with modern art treatment, the brand name, even though secondary in importance, can be sufficiently featured to justify the cost of the posters.

Mass displays, advertising cards, and back-wire posters must be designed to complement the supermarket's functional utility and attractive appearance. With manufacturers providing p-o-s material of varying types, sizes, designs, and colors, the chain's main effort is directed at maintaining a balanced appearance of displays and promotion material.

Here's an example: A poster may meet all copy and color requirements, but still be difficult to team up with a companion poster on the same back-wire. If the manufacturer provides two posters, sufficiently different in design to avoid sameness and yet compatible in size and use of color, the chances are that the two will be used more readily than a single poster.

Back-wire posters (full size) are usually ¼-sheets (42x59 in.) although for some products, a poster one-half this size may be used (21x30 in.).

Modern display pieces, such as the relatively new mobiles or animated units, get priority over run-of-mill material. This is especially true if they're designed for easy set up in a balanced or multiple display.

You could well have your advertising department study the use of these pieces in relation to the supermarkets' available space and needs. Also demand more original and modern pieces from artists and designers of p-o-s material.

Product Display Pointers

In most Safeway stores, special merchandise is no longer stacked in mass floor displays. Instead, it is placed on island end-displays, sometimes called 'end-dump displays.'

These are built at the ends of aisle fixtures and provide a curbed plat-

Checklist of Safeway Division Buyers

Division	No. of Stores	Buyer's Name	Office Address
Oklahoma City	44	J. C. Hamilton	9 NE. 23rd St.
Amarillo	13	Leo Daniels	6500 S. Wash. Rd.
Washington D. C.	183	M. P. Thomas	1845 4th St. NE.
San Francisco	135	V. L. Allen	1950 Army St.
Sacramento	70	G. C. Erb	1701 3rd St.
Wichita	45	R. J. Smith	1644 E. Central
Omaha	88	Hayden Jones	115 S. 46th St.
Tulsa	40	J. Carey Hughens	310 N. Detroit Av.
Kansas City	83	E. A. Isaak	624 Westport Rd.
Denver	131	H. A. Theander	810 14th St.
Salt Lake City	67	C. L. Krumperman	150 S. 1st West St.
Little Rock	33	R. L. Jetton	411 Victory St.
Portland	95	F. W. Frink	1139 SE. 3rd Ave.
Spokane	44	G. A. Meyer	West 242 Riverside Av.
Seattle	105	E. O. Sjolseth	1260 4th Av. S.
Los Angeles	215	L. E. Henry	1925 E. Vernon Av.
Butte	45	G. E. Lembke	28 W. Granite St.
San Diego	36	M. A. Early	715 "J" St.
Phoenix	43	J. H. Cassell	3333 N. 7th Av.
New York City	181	A. J. Davis	300 Mercer St., Jersey City, N. J.
Dallas	117	H. T. Johnson	9111 Garland Rd.
El Paso	43	S. C. Barbee	6500 Montana St.
Vancouver	60	W. A. Rhone	840 Cambie St.
Alberta			
Edmonton	16	W. A. Hembroff	11715 108th Av.
Calgary	19	James Johnson	215 42nd Av., SE.
Winnipeg	51	H. G. Keith	313 Pacific Av.
Saskatoon	9	H. G. Keith	313 Pacific Av., Winnipeg
Regina	14	James Sinclair	1916 Dewdney Av.

Suppliers to Contact Re Private Label Lots

PIEDMONT SUPPLIERS (Div. of Safeway Stores)—114 Sansome St., San Francisco 6. A. C. Harlander, Div. Mgr.
Charter Products Co.—Byron H. Shideler, Co. Mgr.
Glencourt Importing Co.—Robert D. Wilcox, Co. Mgr.
Regent Food Co.—A. S. Rupert, Co. Mgr.
Buyers: G. W. Wickland (canned fish), Sterling P. Smith (canned fruit), Gordon E. Shellberg (canned vegetables), Wade R. Masters (containers), W. E. Yocom, Jr. (dried foods), John O. Ahern (paper), Neill Horan (sugar).
New York Buyer: E. J. Hughes, 300 Mercer St., Jersey City, N. J.
Chicago Buyer: R. M. Harcourt, 205 W. Wacker Drive, Chicago 6.
Whitney Frozenfood Co.—A. W. Young, Company Buyer; G. F. Butler, Buyer.

BEVERAGE DISTRIBUTORS, INC. (Subsidiary of Safeway Stores—609 Sutter St., San Francisco 2. A. D. Morton, Gen. Mgr.
Drexel Distributing Co.—A. M. Girard, Dept. Mgr.
Marlboro Beverage Co.—B. E. Byrd, Dept. Mgr.
Peralta Wine Co.—A. M. Girard, Dept. Mgr.

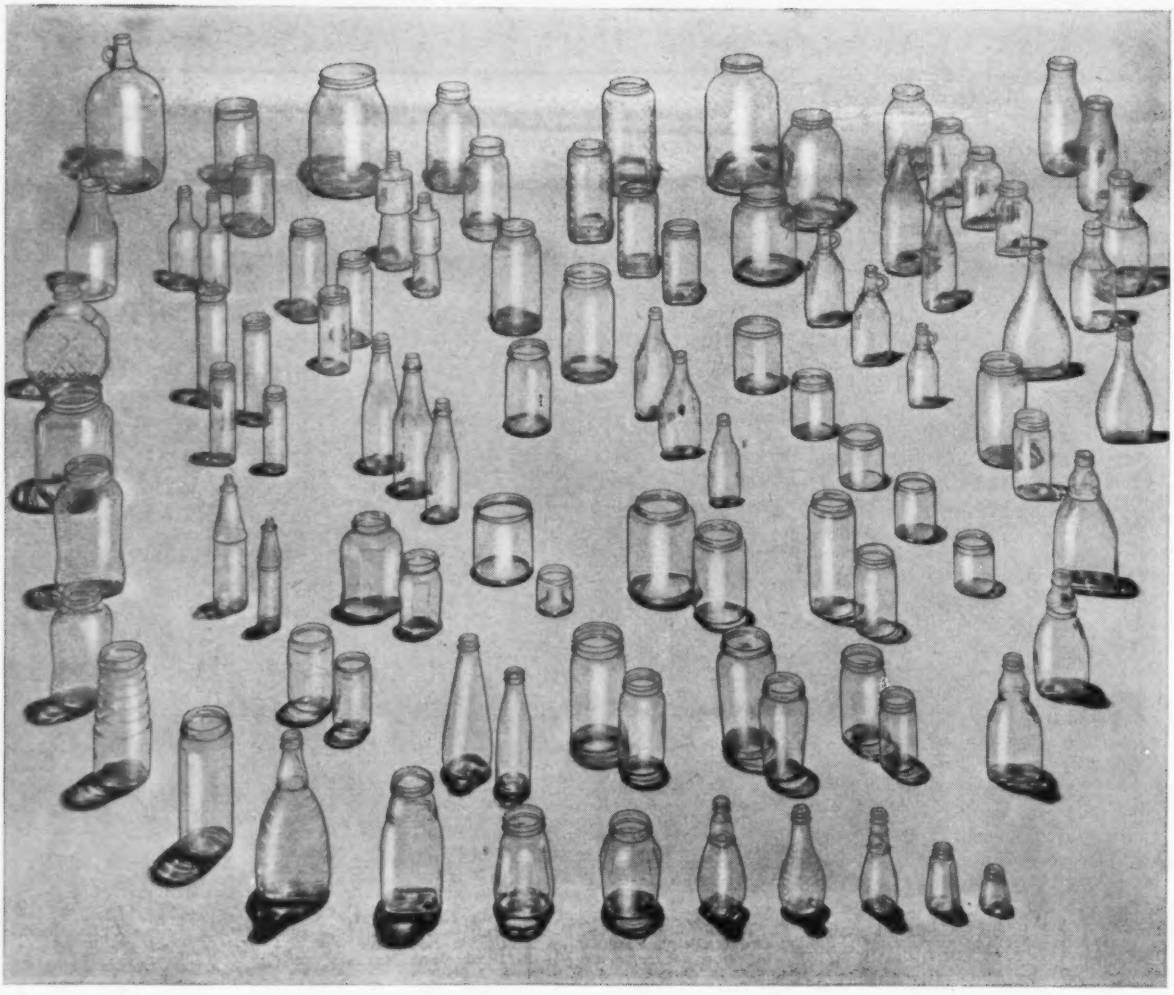
BAKERY DIVISION (Div. of Safeway Stores).
Fairfax Baking Co.—999 Newhall St., San Jose 26. Glen W. Miller, Div. Procurement Mgr., buys for: Famous Cereals Co., Guthrie Biscuit Co., Jell-Well Dessert Co. (Safeway brand gelatin, desserts & puddings), and Tuxedo Candy Co. (manufacturer company brand candies).

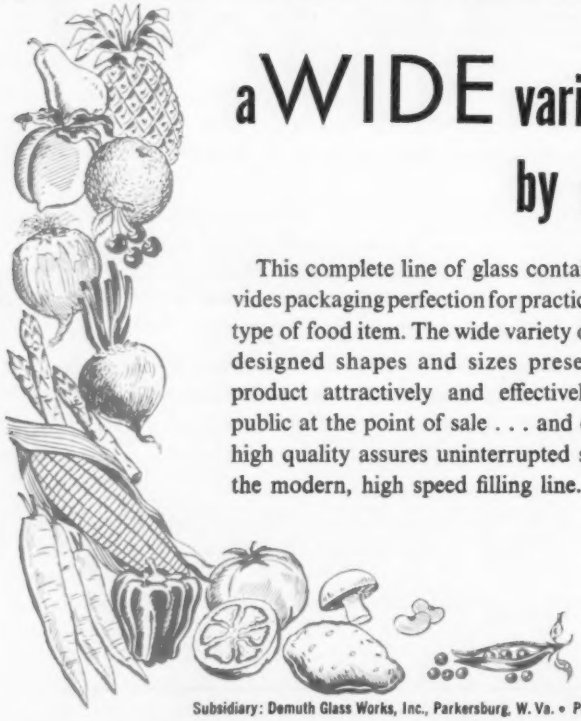
BROOKSIDE DISTRIBUTORS (Div. of Safeway Stores).
Conway Oil Co. (edible oils)—5646 Milton St., Dallas 5. J. D. Atkins, Procurement Mgr.
Coffee Department—1501 Mariposa St., San Francisco. A. W. Brinckerhoff, Procurement Mgr.
Table Products Co. (dressings, flavorings, peanut butter, salad oil, syrup, vinegar, preserves, jam, jellies, apple juice, grape juice)—785 Market St., San Francisco. E. Wade, Procurement Mgr.
Newport Products Co. (soaps, detergents, household chemicals)—1100 78th Av., Oakland 21. R. A. Brown, Buyer (paper, containers, chemicals), and B. B. Westbrook, Buyer (bleach plant operation, glass).

MEAT SUPPLY DIVISION (Div. of Safeway Stores)—Fresh meat supplies (incl. fresh fish & poultry) are purchased at all zone and division points from established supply sources. Supplemental to these purchases, managers of each meat processing operation do buy such things as paper, film, twine, casings, seasonings, and other ingredients (see below).
Fish Buying Dept.—Pier 57, Seattle 1. R. P. Kelley. Clayton C. Absher, 261 Constitution Av., Washington 1, D. C.
Meat Buying Dept. (incl. meat products, lard, canned meats, frozen poultry, frozen pies, fresh and frozen rabbits, etc.)—343 19th St., Oakland 4, H. Gregersen, Mgr.
Meat Processing Dept. (Safeway brand processed meats)—343 19th St., Oakland 4, F. D. Cummings, Mgr.
Branch Plant Offices:
M. F. Concannon, 2501 E. Vernon Av., Los Angeles 58.
R. T. Lewis, 815 Gilbert St., Wichita, Kan.
C. F. Riethe, Foot of Thorn St., Wilmington 40, Dela.

PLYMOUTH PRODUCTS (Div. of Safeway Stores).
Brentwood Egg Co.—2538 Telegraph Av., Oakland 12, A. V. Scollard, Co. Mgr.
Lakeside Butter Co.—461 Market St., San Francisco 5, L. A. Johnson, Co. Mgr.
Lucerne Milk Co.—2538 Telegraph Av., Oakland 12, R. B. Bush, Co. Mgr.
Regal Ice Cream Co.—2538 Telegraph Av., Oakland 12, John C. Pfeffer, Co. Mgr.
Superior Cheese Co.—2538 Telegraph Av., Oakland 12, B. G. Wilcox, Co. Mgr.

PRODUCE DIVISION (Div. of Safeway Stores).
Pre-Pakt Product Dept. (operates repacking, bunching, regrading, processing, packed fresh fruits and vegetables)—5725 E. 14th St., Oakland 21, M. S. Christensen, Dept. Mgr.





a WIDE variety of food containers by BROCKWAY

This complete line of glass containers provides packaging perfection for practically every type of food item. The wide variety of smartly designed shapes and sizes presents your product attractively and effectively to the public at the point of sale . . . and consistent high quality assures uninterrupted service on the modern, high speed filling line.

Your Brockway salesman will be pleased to work with you on any packaging problem. Ask him for samples or ask him for any information regarding your private mould requirements.

Or, if you prefer, call or write direct to the Foods Division, Brockway Glass Company, Brockway, Pa.

SYMBOL OF QUALITY · GLASS CONTAINERS ·

BROCKWAY GLASS

COMPANY, INC., Brockway, Pennsylvania

Sales Offices in Principal Cities

Subsidiary: Demuth Glass Works, Inc., Parkersburg, W. Va. • Plants: BROCKWAY, PA.; CRENSHAW, PA.; FREEHOLD, N. J.; LAPEL, IND.; MUSKOGEE, OKLA.

← For more data, circle this page number on card at back

form about 2 ft. above floor level. The valid theory behind false-foundation display is that customers do not look at merchandise below knee-level.

Further, to build the old-type displays meant bringing extra cases of merchandise from storage to form the unnecessary foundation, as well as returning them to storage when the display was dismantled. This method only served to push up labor costs.

A permanent fixture (accommodating a 22x28 in. sheet) is used directly above the island end-displays for smaller posters or show cards. Since they're pinned to the fixtures, these cards require two holes, of ⅛ in. dia., 16 in. from the bottom, and 18 in. from center to center.

Manufacturers who want to sell to Safeway's supplier companies have a much simpler path to follow. Packs of frozen, canned, or dried foods put up under Safeway's own brands are processed to the chain's rigid specifiations under the supervision of quality control inspectors.

Managers and buyers of each supply company contract for products handled by their respective companies. Top interest here is quality and price of offerings.

"Supply companies are interested in normal offerings as well as small lots and large blocks of surplus stocks for private label or under manufacturers' brands," according to A. C. Harlander, division manager of Piedmont Suppliers.

Piedmont heads up a group of four supply companies that purchase and distribute foods under Safeway's labels.

". . . Pull a slice—and the next one pops up!"

CASE HISTORY OF MONTH

From files of National Consumer Panel Division of **Market Research Corp. of America. Material is factually correct. Identities of product and companies have been masked to insure anonymity.—The Editors.**

Should We Cut the Price?

Management's problem

HOW COULD WE MOVE the record pack of our canned vegetable product? It was still fairly early in the crop year. Further, our entire field had unusually heavy supplies available for civilian consumption.

During the first two months of the crop year, our shipments had greatly exceeded the same period of the previous year. This was expected because a relatively light carry-over made possible a substantial trade inventory replacement.

In the third month, however, our shipments dropped drastically below those of the year before. Question: With such a heavy supply threatening profits, should we cut our price to move the large balance of our pack?

WHAT WOULD YOU DO?

Management's decision

We decided to make a fast, up-to-the-minute check of the quantity of merchandise that actually moved into consumers' hands during the first quarter of the pack year. Then we'd place this information in the framework of the civilian-supply and factory-shipment situations.

Result of action

Using facts turned up by the National Consumer Panel, we arrived at this picture: (1) Civilian supply of our brand was up 23% over previous year, (2) factory shipments (which included substantial restocking at wholesale and retail levels were up 20.5%, and (3) consumer movement had risen 25% (more than enough to take the increased civilian supply off the market).

Hence, management concluded that the pack could be moved easily without price cuts if the consumer movement rate continued. However, weekly consumer purchase data had to be watched closely for any sharp drops.

Budgeted shipments for the balance of the pack year were set up, and consumer movement was forecast by applying normal seasonal fluctuations to the base established by the first three months' pattern.

The company moved all but a tiny portion of the pack into trade hands without breaking price. If it had cut its price at the time shipments declined, it would have lost substantial revenue on the remaining supplies, and would have had to pay another large amount in floor-stock protection.

For more information, write to Case-History Editor, FOOD ENGINEERING, 330 West 42nd St., New York 36, N. Y. Your inquiry will be directed to source of case-history item.

MARKETING SIGNALS

See No Let-Up in Convenience Demand

With national income dipping, and unemployment rising, concern has been felt over possible slacking of demand for higher-priced convenience-type products. Putting this question to a marketing expert and a convenience foods packer, FE was told–

Time-saver products have become a "built-in habit" with busy housewives. Conditions will have to become significantly worse than they are now before shoppers give up the advantages of work-free products–Arno H. Johnson, senior economist, J. Walter Thompson Co.

Consumers will eat out less if household budgets have to be tightened. This means: more eating-in by families, continued demand for foods that minimize kitchen time–Jeno Paulucci, president, Chun King.

Debate "Good Faith" Price Cuts

A ruling by the Supreme Court that Standard Oil (Ind.) acted in "good faith" in lowering prices to four Detroit jobbers to meet competition may have implications for the food industry. Watson Rogers, National Food Brokers Assn. president, says this court decision weakens Robinson-Patman Act enforcement, opens the door to a two-price system that discriminates against small buyers.

Unless R-P Act is strengthened, Rogers contends, the two-price system will drive half of the wholesalers out of business in five years, leave processors with fewer customers. He urges support of S-11 and HR-11, known as "Equality of Opportunity" bills, which aim to curb price discrimination.

Deals Can Do Good—Sometimes

Much maligned deal merchandise can produce positive results if linked to long-range objectives, according to Peirce C. Ward, Jr., national sales planning manager of GF's Jello Div. He told NY chapter meeting of American Marketing Assn. that when price promotion is part of the long-range marketing objective of building consumer franchise, thus adding to product profits for the company, it becomes a legitimate merchandising device.

However, he warns, deals by themselves won't build a consumer franchise, nor will they cure a sick product. Furthermore, he adds, price deals can spell extra harm by concealing fact that product is ailing, thus slow up necessary diagnosis.

Candy Makers Set Sights on Easter

With Easter ranking second only to Christmas as the best selling season for sweets, confectioners are rolling up their sales guns. FE spot-check disclosed that–

Fanny Farmer will run a series of TV Easter parties for needy children, as well as sponsor egg rolling contests. Store displays of E. J. Brach & Sons will feature tie-in with Bugs Bunny, the cartoon character. Mars' Easter bunny basket will serve as a point-of-sale unit.

Hershey Chocolate will market candy products with Easter overwraps and bands. Advantage is that if any items are left over after the holiday, retailer need merely remove wrap and sell the candy at regular markup (rather than at a sacrifice price).

Teenagers a Hungry Market

With teenagers playing a growing role in food purchasing, alert manufacturers are shaping special promotions toward the youngsters. Objectives: Tap the $6 billion a year that teenagers receive in allowances, and start building brand loyalty among the 11 million 14-17 year-olds, who will start families of their own in the next two to six years.

Armour, exploiting the popularity of party games, inserts in its Star franks packages comic-type booklets that show ways to hold a party, plus unusual recipes for hot dog meals and snacks.

Merchandising of National Macaroni Mfrs. Institute this year will emphasize "youth must be served" angle. Further, teenage talent will be used on new half hour TV show sponsored by Tasty Baking.

BRIEFS

With retailers ordering in smaller lots to cut inventory costs, manufacturers are decentralizing distribution centers for faster deliveries. Pillsbury Mills' new service center at Des Plaines, Ill., enables company to speed order on its way to customer 24 hr. after it's received.

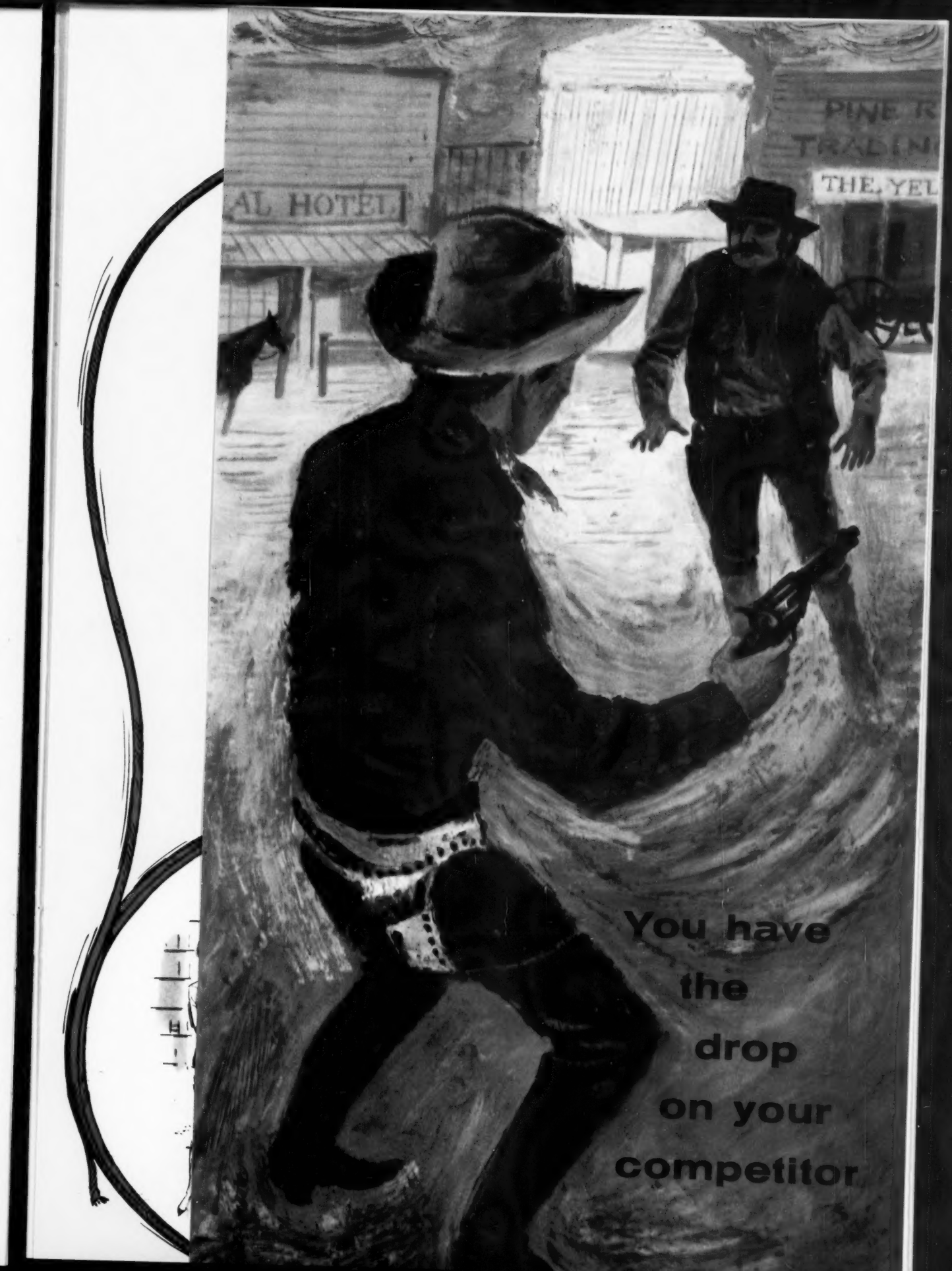
Hormel is strengthening its position in distant markets by shipping "green" meat products to other packers for processing under Hormel formulas for its own label. Freshness is assured.

Test marketing of frozen turkey quarters and pieces is being carried out by California growers, who hope the convenient form will popularize turkey for everyday eating. Similar trial failed 10 yr. ago. But growers figure housewife is now more receptive to meal-size portions.

Shelf space gets even tighter–with Super Market Institute reporting that members now do fully 5% of total volume in non-foods. And for 12% of the stores, non-foods is 10% or more.

Promoting community interest and goodwill is objective of public relations manual made available by Pepsi-Cola to its more than 500 bottlers. Booklet details how to hold a press conference, publicize company activities, and exploit special newspaper supplements.

Participation in overseas trade fairs pays off. Florida Citrus Mutual received orders from West Germany for 2,000,000 gal. of orange concentrate, credits the bids to citrus field's role in '57 Cologne food fair.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The Sucaryl name can be working for you right *now*—on your labels, in your advertising, wherever you promote your diet line.

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Here's Sucaryl's current "ad-of-the-month"

You can't taste the difference, but...

Sucaryl makes it lots easier to cut down calories

CHERRY BAVARIAN CREAM

2 1-lb. cans red sour cherries	1 tbsp. lemon juice
1 envelope unflavored gelatin	¼ c. nonfat dry milk solids
2 tsp. Sucaryl solution	¼ c. ice water
¼ tsp. salt	

Drain liquid from cherries, saving ½ c. Soften gelatin in ¼ c. liquid; add Sucaryl, dissolve over hot water. Chop cherries; add remaining ¼ c. liquid, salt, lemon juice. Add gelatin and mix well. Chill until mixture begins to thicken, combine dry milk solids and ice water; beat to texture of whipped cream. Fold into gelatin. Pour into lightly oiled 3-cup mold. Chill. Serves 6.

FREE—Our new cookbook, "Calorie-saving Recipes with Sucaryl," including dozens of new kitchen-tested ideas for desserts, beverages, sauces, dressings. . . 50 wonderful recipes in all! Get your free copy at your drugstore.

Sucaryl simply says you don't have to trim portions to trim calories. No compromising your taste, either . . . any dish sweetened with calorie-free Sucaryl tastes just like its sugar-sweetened twin.

You use Sucaryl practically anywhere you would sugar. In tablet form, to sweeten your coffee, tea or any other drink. Solution, for fruits and cereals, for cooking and baking.

Sucaryl, of course, is for anyone sensibly counting calories, and for those who for any other reason can't use sugar. Low salt diets call for Sucaryl Calcium. Abbott Laboratories, North Chicago, Ill. and Montreal, Canada. Abbott

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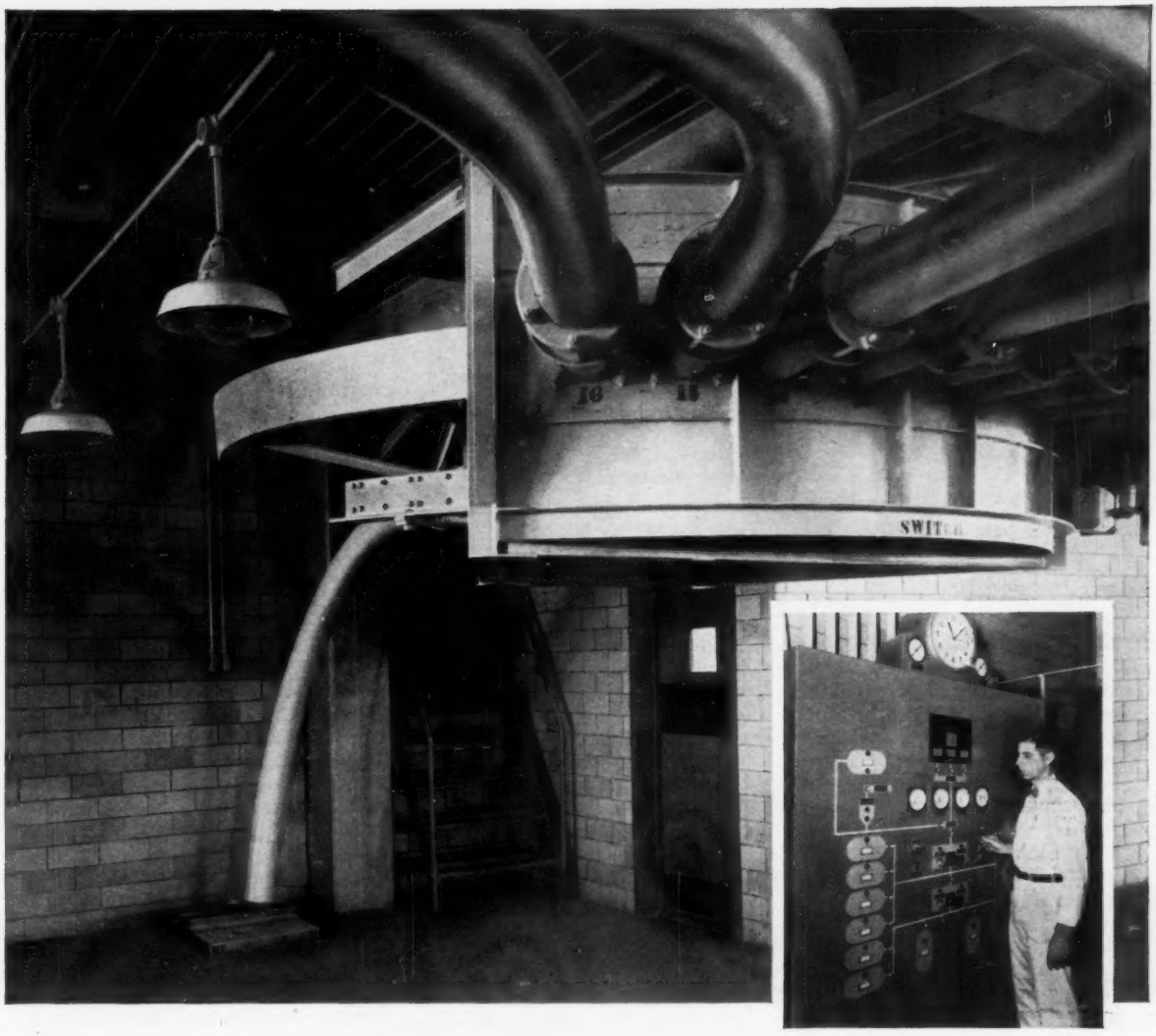

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. . . Conveyed Pneumatically

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The system is operated by two men who receive, store, proportion, and deliver to mixers 10 million lbs. of ingredients a month.

Fuller equipment for this operation includes: a vacuum type Airveyor® system with three bulk flour unloading stations, a pressure type Airveyor system for transferring flour to storage or sugar from storage to icing department, and two specially designed motorized pipe switches through which the various flours are diverted to selected bins. F-H Airslides and metering feeders are located at the bottom of the storage bins.

Not only has this pneumatic system resulted in substantial savings for the bakery, but it has also established sanitary conditions and conserved storage space.

For speed, convenience, and sanitation in *your* materials handling operations, call on Fuller. The proper combination of Airveyors, Airslides, and accessory equipment to meet your specific handling requirements will increase material flow, release workers for higher skills, modernize your production methods.

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LOWER HANDLING COSTS are important asset of multi-packs. With four bean cans to a unit, this clerk price-marks and stocks just 12 cartons instead of 48 tins.

Multi-Pack Units

Merchandising advantages and reduced in-store costs are extending multiple packaging to wider variety of food products . . . New equipment expands usage to smaller concerns

IMPROVED SHELF DISPLAY, lower handling costs, and increased consumer approval are spurring multi-packs into plus-sales for a greater variety of food products.

And equipment suppliers are keeping pace with new machines that simplify handling, and expand the use, of multiple units.

Dominant in the brewery and soft drink fields—where they account for between 50 and 60% of canned beer sales and slightly more than that for popular take-home beverages—the 'multies' are steadily increasing their share of frozen orange juice sales, also dog foods.

Other fields where multi-units are expected to make big strides this year are:

1. **Baby foods.** Progress here has been held up by tendency of mothers to buy one or two containers of several product varieties at a time. Processors fear that including an unwanted variety in a 3- or 6-pack would make the consumer bypass the item.

Stepped up market research is now being carried out to determine the most popular varieties and what combination of products has the widest appeal.

2. **Single-service packages.** These are favored by smaller household groups. Libby will introduce its new 5½-oz vegetable cocktail in multiple packs, and other canned fruit and vegetable juices are considered good prospects.

3. **Rectangular cartons.** Cylindrical containers have dominated the multi-pack picture up to now, but Mead-Atlanta's new "Cluster Rap", designed for square-type boxes, will encourage multiple selling for frozen foods, cake mixes, cereals, and similar products.

Footholds in widely divergent fields were recently established. Here are two examples:

A dairy firm increased sales 8% by using a shelf-locker that combines twin quarts of milk into a half-gallon package. The carrier (developed by Packaging Planners, New York City) is a folded stiff-paper self-locker that grips the cartons under the top flange.

Actual material costs for each half-gallon were shaved $\frac{1}{10}$¢ compared to the ½-gal. unit previously employed, according to Walter Colteryahn, sales manager of Wm. Colteryahn & Sons Dairy, Pittsburgh. No additional line equipment is needed to handle the carrier.

Sales of canned sardines improved significantly in a multi-pack test jointly staged by Maine Sardine Council and Container Corp. of America. Carried out in eight test supermarkets, and without any special price or promotion, the controlled trial showed: Sales upped 34% by 3-pack combination, 32% by 4-pack, 31% by 6-pack.

Taking note of this, at least one processor, Jasper Wyman & Sons, Milbridge, Me., has already switched to 4-can cartons, and other firms are expected to follow.

For Smaller Firms

Up to now, multi-item packing machines have been designed primarily for high speed runs—120 to 150 carriers a minute. With break-even point up around 750,000, equipment is restricted to products with extensive distribution.

Recently, new machines have been developed for limited runs, thus making multi-packs available to smaller-sized firms.

Two Hand Units

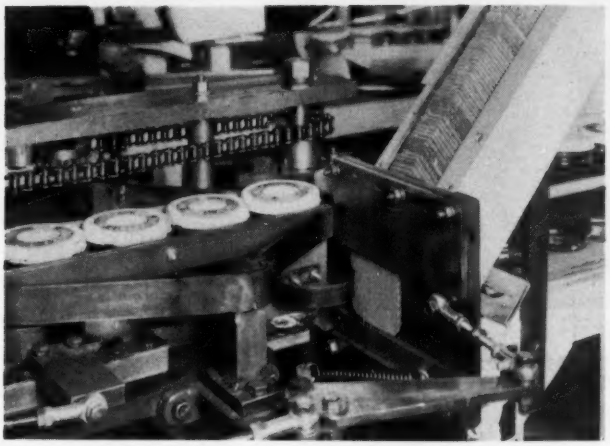
An air-actuated and hand-operated unit by Tee-Pak, Chicago, using the cellulose casings the company provides meat packers, fits seamless bands over and around the products. Advantages of the transparent banding, says William J. Hlavacek, sales development, are that it permits the customer to see the package design, conforms to the shape of the product—whether round or rectangular—and is printable in as many as five colors.

Basic price of the machine is $500, FOB Chicago, plus the cost of mandrels (usually less than $50) to suit a particular pack. Total cost of labor and materials ranges from 2 to 6¢ per pack, Hlavacek estimates.

Production rate is around 20 units a minute. However, available attachments can increase this.

A manually operated "twin-band" unit has been developed by Rossotti Lithograph, No. Bergen, N. J., for small runs intended for trial promotions of a product, spot tests, and pin-pointed area sales. A hand jig wraps banding (of adjustable widths) around product unit, and a locking device secures wrap.

Move Into High Gear



BETTER PROTECTION of glass jars in multi-units is assured by corrugated partition. Plunger on Mead-Atlanta machine pushes pad between every other jar in sequence at regular running speeds.

GREATER STACKABILITY of carton carriers encourages end-of-aisle displays, gives manufacturer added chance to boost product sale.

Cartoning of multi-units has been sped, too. New case loader by J. L. Ferguson, Joliet, Ill., automatically puts 8/6-pack or 16/3-pack carriers of 12-oz. cans into shipping container, then upends the filled case for conventional sealing.

Sparking the greater use of multiple selling as a merchandising tool are its advantages to manufacturer, retailer, and consumer.

Mead-Atlanta's marketing manager, Robert Gerson, points out that multi-packs are in line with the demands of mass merchandising. Billboard effect of the carton carrier has a greater impact on the consumer both in store and home, he says—an effective spur to impulse sales.

The device is particularly effective for gaining initial distribution of a new product, he adds. Example: To gain shelf space for its new espresso instant coffee, Jomar dual-packed it with its regular instant product, thus got the consumer sampling it desired.

Coupons, premiums, and related item tie-ins, lend themselves to multi-packs, Gerson observes. Recent examples: Sterling Salt is currently running a series of six different premiums, which it inserts in multi-units of salt rounds. And Heinz is marketing combined packs of hot dog and hamburger relish.

THUS ENABLED to carry more goods with less effort, housewife goes for added convenience of multi-unit cartons.

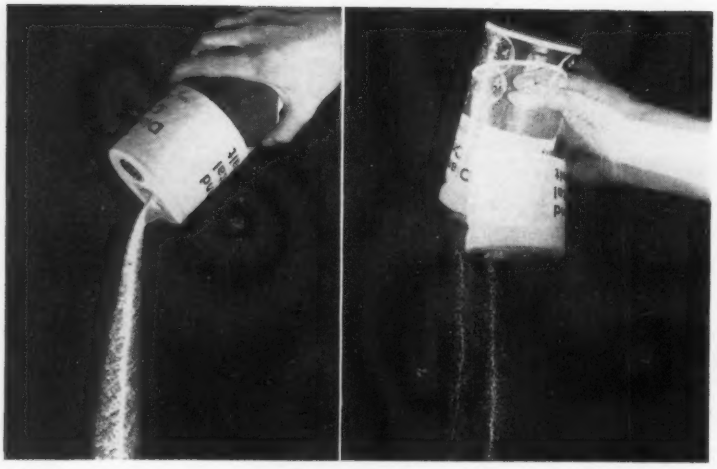
Further, Armour has a printed money-back coupon on the rear side of its dog-food pack, thus avoiding costly redesign of package artwork.

For the retailer, multi-packs spell less handling, hence lower costs. With fewer physical movements necessary to price-mark, shelf-stock, and check out the merchandise, it's estimated labor costs are cut 7%.

'Multies' also lend themselves to end-of-aisle displays because of the easier stacking made possible by the carton carrier. Gerson points out that this use reduces manufacturer's costs for special in-store displays.

Consumers go for the multi-pack because it's in line with trend to once-a-week shopping, and it means easier handling. —End

LIGHTER MULTIWALL bag with creped-board tape at both ends slashes salt firm's sacking outlays.



CONVENIENCE for housewife is extended by new retail package that includes shaker in addition to traditional pouring spout. Label re-design accents end-use of salt as seasoning with full-color illustration of succulent steak.

Trims $Thousands Off Packaging

Switch to lighter bag, with stronger closure, racks up big savings on industrial-shipment containers for Diamond Salt . . . Kitchen box redesigned

SHARP PACKAGING control can bring you top results—through minimizing container costs and maximizing design impact.

Double-pronging these two goals has enabled Diamond Crystal Salt, St. Clair, Mich., to: (1) Slash several thousands of dollars from its industrial packaging costs, and (2) redesign the label of its 26-oz. round container for better in-store display.

Impressive dollar savings were achieved by changing key specifications to cut down breakage in the 4-ply, 100-lb. capacity multiwall sewn valve bag used for industrial shipments. Previously, the company employed (for 95% of its deliveries) a 50/90AL/50/50 bag. Here, the 50 stands for the weight per ream of the natural kraft paper used in three of the plies. The 90AL ply indicates two 30-lb. sheets of natural kraft laminated by 30-lb. asphalt.

DONALD MacDONALD
McGraw-Hill News Bureau, Detroit

Actually, 90AL has the strength equivalent of 50-lb. natural kraft, so the four plies total up to 200 lb. of basis-weight from a strength standpoint. For closures, 70-lb. flat tape was sewn with rayon thread.

Experience showed that most of the breakage occurred around these sewn closures. It was decided that the stitching was the weakest link in an otherwise-too-strong chain.

New Tape Cuts Breakage

Karl Guinther, industrial engineer, and Roy Klecha, purchasing agent, went to work on the problem with James E. Fitzsimmons, of Union Bag-Camp Paper's multiwall bag division. Tests were carried out by Union Bag's product development lab. These indicated that a 180-lb. basis-weight bag—40/90AL/40/50—with Union Bag's "Sew-Strong" closure performed better than the 200-lb. basis-weight bag being used.

The closure, developed by Union last year, is a 42-lb. creped-board tape. It's firmly pasted to, and sewn through, the bag at the closures. Because of the cushioning effect of the board and its greater strength, this greatly reduced sewing-line breakage.

Diamond Salt still ships about 5% of its industrial products in a 50/50/50/50 all natural kraft bag. This type, feasible only when there is no moisture problem, is demanded by some high-volume customers for its scrap value. Asphalted layer prevents economical reprocessing of the other bags.

The substantial savings lie entirely in reduced paper costs of the lighter basis-weight bag. Company says the economies are realized even after the added expense of the creped tape.

At the St. Clair plant, eight filling stations, serviced by six portable valve bag packers, are used for industrial packaging. The new bags require no change in filling procedures or running speeds.

Diamond's industrial line includes rock salt, water softener, nuggets, granulated salt, an extra-fine milled salt, and a dozen different grain sizes of Alberger flake salt—a company exclusive that is a popular seasoning.

The milled salt is very difficult to handle because it acts much like water—if spilled, it runs across the floor to the lowest point.

Industrial products are generally shipped in 100-lb.-capacity bags, which come in twelve different sizes. Retail and restaurant trades receive deliveries in 25-to 50-lb. capacity bags.

Store Unit Dressed Up

The company has also modernized its 26-oz. retail container. Surveys had shown that the red and yellow colors of the old label clashed, and that consumers favored a design that linked product contents to ultimate usage—that is, a seasoning.

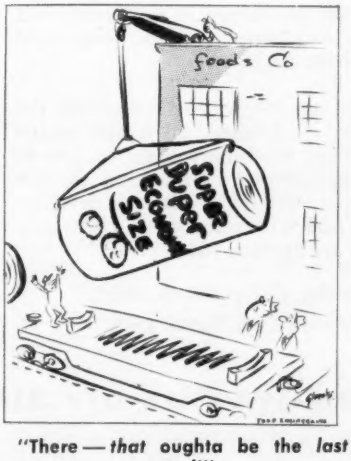
The redesigned label—a red and white affair—carries out the usage theme, with a natural color illustration of salt being sprinkled on steak.

To make the package more convenient for the housewife, the company supplemented the traditional pouring spout with an extensible shaker. Although the shaker hikes packaging costs, the company feels the step will win housewife approval and thus build greater sales.

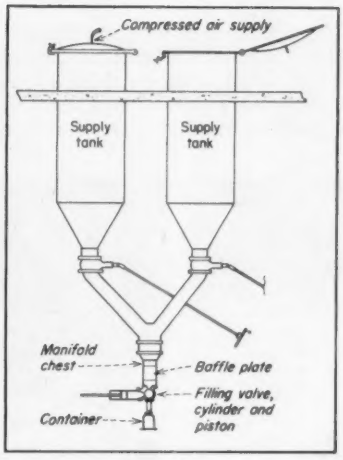
Fitting in a shaker can be a problem. For example, lower flange has to be small enough to fit through the hole but big enough so that it won't readily pull free when extended by the housewife. Diamond is hopeful that a machine it developed for this purpose will minimize the problem.

Moisture absorption can be a problem, too. The shaker device can't be heat-sealed like the pouring spout because the plastic construction would melt. However, its tight fit should reduce moisture entrance.

—*End*



"There — *that* oughta be the *last* word!"



SMOOTH FLOW of sticky marshmallow is assured by special baffle. Product temperature and piston-stroke speed are controlled at all times.

UNIFORM FILL is obtained for each jar and air wrinkles eliminated. Breakaway technique at end of each fill avoids product smears on glass jars.

Smooth Fill of Sticky Food

Switch to machine-packing of marshmallow boosts output, abolishes product overflow

BOTHERED by packaging an adhering product that doesn't fill smoothly and causes costly overflow?

Then read how Hipolite's new automatic filling line for Marshmallow Creme more than doubles production, halves labor costs, and guarantees fill accuracy.

Under this St. Louis plant's old system, 11 girls worked on the packing line. Glass jars, cleaned by two girls, were hand-fed to a conveyor that moved them to three filling stations.

A trio of girls hand-filled the jars one at a time, using a flexible hose that forced the product into the containers via a closed pressure system. Output was about 30 jars/min.

Because the filling method often caused the product to smear, six girls were needed to wipe off the jars.

Hipolite contacted Hope Machine Co., Philadelphia, and discussed ways of modernizing the packaging line. Here's Hope-designed solution:

Empty jars are removed from shipping cartons and move on a single conveyor line to a Hope 6-line heavy duty automatic filling machine (Type 19). Here, "turnover pockets" invert the jars and vacuum-clean them.

Special feature of the filling machine is a manifold hopper chest with adjustable baffle controls at each filling position. A closed air pressure system keeps the product flowing evenly without air wrinkles and in sufficient capacity to satisfy the demand of the machine.

Special valves, pistons, and cylinders give a true "bottom up fill" and a quick drop away at the end of the filling cycle. A 6-in. feed line from the processing vats on the floor above avoids air entrapment, keeps product flowing smoothly to filling machine. Discharge conveyor sends filled jars to the capper.

Due to the line's automatic handling and higher speeds, only 5 girls instead of 11 are now needed, and output is 72 jars/min. compared to the old 30. Furthermore, exact amount of product is deposited in each jar, thus ending costly spilling.

Hipolite's President Warren Shapleigh says the new system enables the company "to meet increased sales and all market requirements through stepped-up production." Hipolite recently named A. E. Staley Mfg. Co., Decatur, Ill., as exclusive sales agent of its Marshmallow Creme. —*End*

Packaging is more than "Skin Deep"!

PACKAGING PROBLEM:

Carnation Company, Los Angeles, is a producer of an "Instant Hot Cocoa Mix" which is used institutionally by operations such as soda fountains, restaurants, schools, hospitals, drive-ins, etc. Until recently, this product was packaged in a conventional pillow pouch produced by Western-Waxide. What Carnation desired was a package that would offer a convenience to the user; preferably speed his opening of the package. Close portion control was another requirement.

Increased Sales . . . by Design!

SOLUTION:

Western-Waxide's Package Research and Development Laboratory went to work on the problem. It was already known that Crown Pouch 2508 was the proper material to protect the hygroscopic product. This material is 25# pouch paper laminated with 7# polyethylene to .00035" aluminum foil and coated on the inside (foil side) with 15# polyethylene. One of Western-Waxide's employees came up with the idea that made this the newest thing in flexible packaging. Why not put a tear string in the pouch? It was done, after considerable experimentation, by introducing a thread to the material during the final polyethylene operation. When the pouch is formed on the user's machinery, the string lies in the fold that is the unsealed side of the three seal fin pouch. The two ends of the tear string are sealed into the sides so that they will not pull loose when the pouch is opened. The user of the product simply tears up on the corner of the pouch and the string neatly cuts paper, foil and poly right across the top of the package.

(NOTE: In actual use it has been found that the C-Zip pouch may be formed, filled and sealed on the most critical machinery with no loss of speed. Other applications in addition to unit packaging of hygroscopics are under development. The C-Zip pouch is exclusive with Western-Waxide. Patents are applied for.)

For a demonstration, information and sample of the tear string C-Zip pouch, visit booth F at the Packaging Machinery & Materials Exposition, Atlantic City, March 25-28

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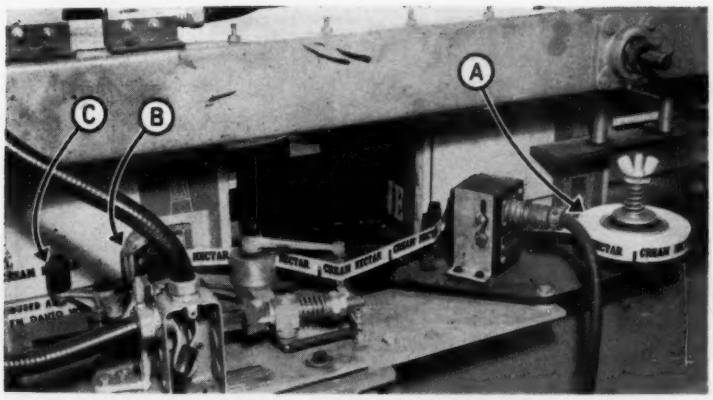


PRINTED TAPE unreels from roll (A) as cartons come from case-sealer. After label is positioned on carton, it's severed from roll when electric eye actuates stationary cutter (B). Rubber roll (C) presses it in place.

EASIER product identification and improved carton appearance are achieved by printed pressure tape.

Tape Labels Cut Inventory Costs

Enterprising winery saves on warehouse space with standard carton that's mechanically badged by roll-stock applicator . . . Change of labels is easy

USING a standard carton for several varieties of a product brings big savings in packaging costs. But then the labeling of the cartons to indicate product contents can be a problem.

If the containers are preprinted with product name beforehand, greater warehouse space is required to store a larger number of boxes. Also, pegging inventory of cartons to fluctuating production orders can get very complicated.

Mogen David Wine Corp., Chicago, which sells Key brand wine in three types, hit on a partial solution years ago: A workman would stencil the name of the wine being processed on each carton as it passed on the packaging line.

But this system fell short of being perfect. Often the stencil was poorly aligned on the space reserved for the letters, and the words would run into the printing on the carton. Or the letters would smear, becoming illegible.

Recently, the company came up with the real solution—printed pressure sensitive tape. Production Superintendent Edwin Rohrback had read about the tape in an industrial publication, and he asked the maker, Minnesota Mining & Manufacturing, St. Paul, if such tape could be applied automatically to the MD cartons.

Back came word advising use of a printable flatback paper tape ("Scotch" brand, No. 266) available in a yellow color to match the background on the cartons. A flat-surface tape applicator was suggested for putting the tape on mechanically.

This applicator, which can be fitted into almost any type of line operation, has a maximum speed of 80 applications per minute. Its speed is governed by line speed, which in Mogen David's case is about 10 cases/min.

An electric eye unit actuates a cutoff blade when the proper length of tape has been dispensed. Each label carries special cutoff signs—vertical black lines. These break the intensity of light reflected from a small bulb into the electric eye, thus causing the signal to the blade.

Positioned immediately following the case-sealing unit, the applicator places a 3x¾-in. tape label with controlled uniformity.

Quantity lots of each type wine are packaged in several-day runs by Mogen David, in order to make most efficient use of machinery and manpower. When a changeover is made, it takes only minutes to fit a new printed-tape roll on the applicator.

The rolls (lettered by Print-O-Tape, Chicago) carry sharp black boldface letters that are easily read.

"These labels give our shipping cartons a decidedly improved appearance," says Rohrback. —*End*

HOUSEWIFE flips off second lid to get spice packet, which she may use to make hot or medium chili. Or, for mild chili, she may prepare dish direct from can, without added seasoning.

Flip-Lid Can Lets Housewife

Spice packet is inserted in double can-top, enables consumer to make hot, medium, or mild chili from the same tin . . . Twin-lid gives snug stacking on shelves

WHAT CAN YOU DO when the seasoning of your spiced product—no matter how you do it—irks a good number of customers?

One solution is to use a package that enables the housewife to prepare the product to her own personal liking.

That's the tack taken by Illinois Meat Canning Co., Chicago, following threats to sales due to conflicting consumer ideas on how hot or mild its canned Broadcast chili should be seasoned.

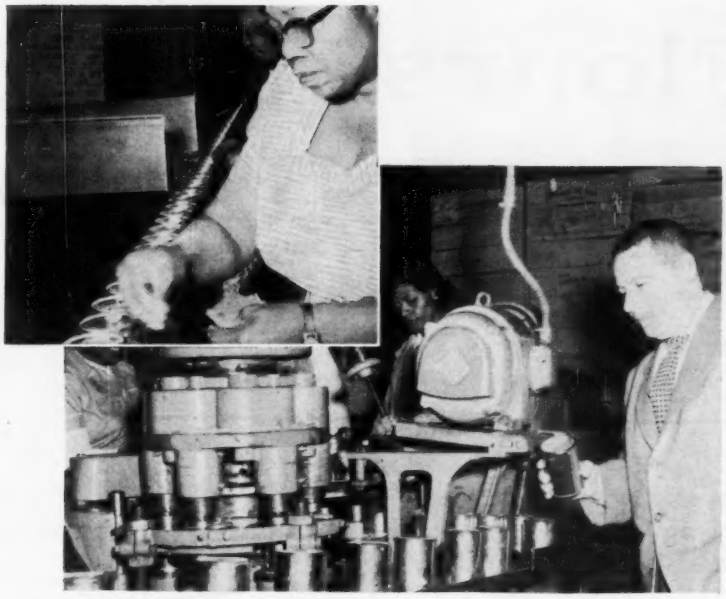
Specifically, IMC's answer is a double-top metal can. It puts a spice packet under a flip-off lid that fits atop its regular 16-oz. can. Thus, the consumer may make either a hot, medium, or mild dish from the same can.

Use of the full packet makes a hot chili; half of it a medium chili. Or, for a mild version, the product can be prepared minus any added seasoning.

► Also, there's further potential: This packer is now actively exploring other possibilities for the double-lid can. For example, the idea is considered suitable for tamper-proof packing of other auxiliary dry ingredients, ranging through different seasonings and flavor boosters (as MSG), on to cheeses, sauces, and gravies. And another angle is enclosure of promotional material, such as premiums and recipes.

Customer Complaints

Preceding the flip-lid improvement was a series of psychological depth studies and other surveys, dating back



GIRLS (inset) hand-place polyethylene-coated cellophane packet containing spice mix on top of single-file fed cans. Second lids are set on cans as they pass through a 16-pocket rotary feeder (below). They then go to a 6-spindle unit that clinches them at 140 cans/min. Cans finally move to wrap-around labeler and caser. Top lid is easily pried off by housewife.

Season to Taste

to '51. These indicated wide customer dissatisfaction with canned chili. Frequent complaints: "It's too hot", or "It's not spicy enough."

As a result of these reactions, brand-switching was common, making it difficult for any packer to build a consumer franchise.

At one point, after restaurant and consumer surveys disclosed that people made hot chili mild by crumbling crackers into it, IMC launched a chili-cracker campaign.

But this proved to be a gimmick, not a permanent solution.

One company tried putting out two kinds of chili—one hot and one mild. However, this idea had the fault that many grocers tended to stock only one of the two versions, rather than double up on valuable shelf space.

When IMC hit upon the idea of a separate spice packet, it first thought of an aluminum-foil pouch applied to the can as an outsert. However, the idea was soon dropped because of the possibility people would rip the packet of spice off the can.

The twin-lid idea, with the packet placed between, was passed on to Continental Can Co. Problems here were matching the different weights of steel plate and fastening the top lid to the can.

After two years of development, Continental came up with a snap-off lid that would run through a high-speed capper, to be clinched to the can body with the right amount of pressure.

Top lid now fits tenaciously onto the can to protect the spice packet. But the slightest pressure by a spoon, or other opener, inserted in the flip-lid slot (1-in.) makes the cover jump neatly off the can.

Good Stacking

For merchandising effectiveness, the flip-lid is designed so cans will lock together stacked on store shelves. Extrusion of the flip-lid fits inside flange at bottom of the can above it. This way, cans stack snugly for ultra-large store displays.

A new label further strengthens eye-impact of the can change. Checked by visual acuity labs and at store level, this is a three-color (red, yellow, and black) design hailed as superior in "carrying the eye." And it tells the story in a few words, with force and quality-appeal.

Materials for the packet also underwent exhaustive tests. Final choice: A polyethylene-coated cellophane film (Shellmar-Betner).

With the twin-lid problem solved, the company turned its attention to winning consumer acceptance.

First, mechanics of the flip-lid and use of the spice packet had to be clarified for the consumer. This was achieved by crystal-clear instructions printed on the top lid. Point-of-sale material and advertising supported the message carried on the can.

Second, the consumer had to be satisfied with the product upon initial usage. Here, the company came up with can instructions on the varied ways in which the spices can be used.

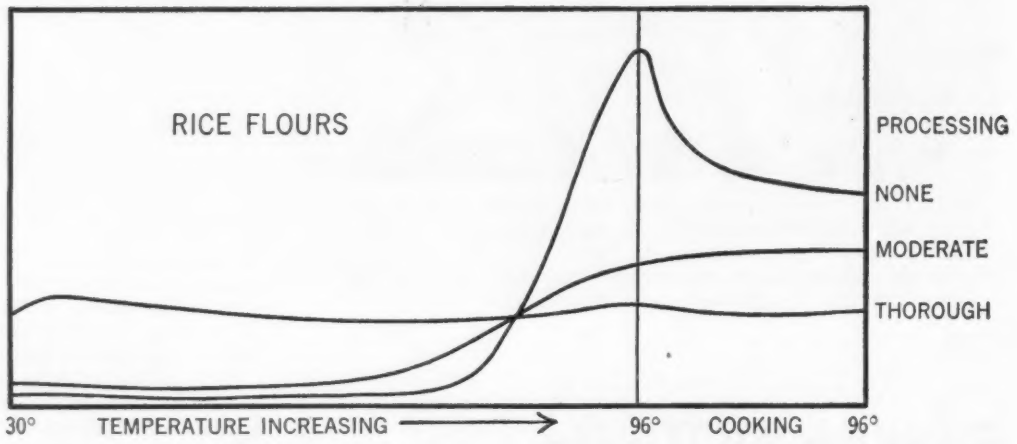
Interesting sidelight is that the company feels the packet is an answer to a psychological problem. For, some market researchers contend that many convenience-type foods leave the consumer with guilt-feelings for not fulfilling her time-honored duty of meal preparation.

By enabling the housewife to participate in the final seasoning, the packet lets her derive satisfaction of accomplishment.

Did the consumers welcome the twin-top can? "Definitely yes," af-

NOW! From The Quaker Oats Company...

Flours PREGELATINIZED to fit your needs



EXAMPLE: The above amylograms illustrate the effect of varying degrees of thermal treatment upon the cooking characteristics of rice flour. Raw rice flour thickens rapidly but is followed by appreciable "Set-back" upon extended cooking. Thoroughly processed rice flour hydrates well in cold water and maintains its viscosity throughout the heating and cooking cycle. Quaker can supply rice flours with any degree of processing within these limits.

Now Quaker can supply you with flours pregelatinized to fit your processing needs.

Quaker's control over gelatinization combined with special grinding and drying techniques can provide corn, barley, rice and wheat flours which thicken rapidly upon heating or which exhibit very little viscosity change during heating.

Pregelatinized, low bacteria flours or meals may shorten the processing time required to produce commercially sterile canned goods. They may also reduce the time needed for cooking, gelatinizing, or dextrinizing.

Quaker will help you select the type of flour and the degree of gelatinization best suited to your products. For information on this service, write to address at right.

QUAKER

Industrial Food Sales Department
The Quaker Oats Company
Chicago 54, Illinois

← For more data, circle this page number on card at back

firms Sales Manager Charles E. Martin.

Backing the debut, last October, were bulletins to wholesalers, store operators, and buyers. And consumer and trade interest was stimulated with ads in newspapers, industrial publications, and consumer magazines.

Consumers Go for It

A month later, consumers were responding with many complimentary letters.

Prior to the holiday season, a large Chicago chain doubled its usual weekly Broadcast purchase order to promote the new can. But even this wasn't enough. Individual store managers asked that their supplies be increased another 50%.

Another case concerned a co-op that ordered a conventional lot for a promotion campaign involving a small newspaper ad and point-of-sale material. Just then, IMC broke a 1,000-line color newspaper ad along with heavy spot promotion on radio and TV.

After the first week, the co-op doubled its weekly order. And later, its purchases were six times what they were before the promotion.

Processing Angles

Putting the twin-lid into production-line operations was accomplished easily. Up to the point where the packet is added and the flip-top lid is applied, processing operation is carried out the conventional manner.

After pressure-retorting, the canned product goes from retort crates onto an unscrambler (Standard-Knapp) that feeds cans single-file to the flip-lid line. Here, girls hand-feed the spice packets (custom-packed by Packaging Services) onto the can tops.

The extra lids are hand-fed onto cans as they feed, via a 16-pocket rotary table, to a 6-spindle unit that clinches them on the cans at 140/min.

Tins then continue to wrap-around labeler, case packer, and gluer-sealer.

The chili product is packed 24 cans to the shipping case.

Granted, spice packet, additional lid, and can-closing machine (along with additional help on the filling line) run up the costs. IMC doesn't say how much. But it reports that increased sales have been enough to absorb the higher costs. —*End*

Designed with the Look of Tomorrow by Raymond Loewy Associates

NEW PARTLOW MFS TEMPERATURE CONTROL

New Looks, Convenience, Efficiency for Your Process Equipment

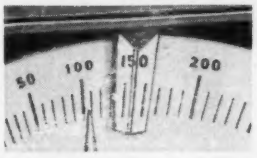
Striking as they are, good looks are only part of the story of Partlow's spectacular new control. Inside and out, the MFS is as rugged and efficient as a temperature control can be, its tough mercury-actuated element having been built to retain sensitivity and accuracy even under extreme conditions. Convenient, too! You can interchange the mercury element right out in the field . . . no factory adjustment is required.

The MFS comes in 10 scale ranges. Accurate within ½ of 1% of scale range, it is especially adaptable to control applications where temperature variations must be kept at a minimum; or where sudden temperature changes demand instant response.

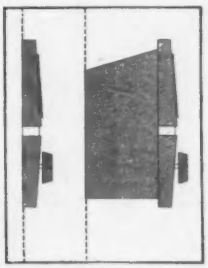
If your product or process requires close, positive temperature control within the –30° F. to 1100° F. range, you are invited to test this advanced new instrument soon. Write, wire or phone today.

THE PARTLOW CORP.
DEPT. F-358, NEW HARTFORD, N.Y.

Only in the Partlow MFS so many important innovations:



Accu-Vision Dial — Magnified pointer for closest settings. Dial calibrations, pointers and background scientifically color-contrasted for easy readability — even at a distance.



Flush or Wall Mounting — No additional brackets or hardware are required. Case is grey reinforced plastic —tough, lightweight, easy to clean, won't crack under extreme temperatures.

LOOK TO PARTLOW FOR:
Recording Controls Indicating Controls
Non-indicating Electrical Controls
Non-indicating Mechanical Controls Timers
Recording and Indicating Thermometers
Limit Controls Combustion Safeguards

PARTLOW

For more data, circle this page number on card at back →

MORE BOTTLES IN SAME WAREHOUSE! Filled wine bottles get a smooth, high lift on Yale K51W Trucks. Full use of air rights boosts warehouse capacity for Gallo—8,000 more bottles!

boosts production, slashes handling costs with YALE K51W ELECTRIC TRUCKS

speeds empties in-speeds cases out!

Gallo's winery at Modesto, Calif. is one of the nation's largest. Here, 32 different types of wines are produced, bottled and shipped. With production steadily increasing, Gallo management faced a common problem: outmoded, obsolete equipment—unable to handle soaring output. For a solution, Gallo called in Yale engineers. Together, they came up with a new handling system that has produced amazing results.

Today, a fleet of new, heavy-duty Yale K51W Electric Trucks unloads thousands of empty bottles a day—feeds them to 6 non-stop bottling lines. Every day these same trucks stack hundreds of full cases in warehouses and load them onto trucks and rail for shipment. Result: fast-cycle operations – big savings in storage space – handling costs at an all time low! Here's why:

Yale K51W is fast! Travels up to 6½ m.p.h. Lifts full 50 ft. a minute.

Yale K51W is short! Only 68¼" from front face of forks. Compactness makes fast maneuvering easy, lets you trim warehouse aisles for extra storage space.

Yale K51W is safe! Excellent operator visibility. Maximum stability. Dead-man control.

Yale K51W is easy to drive! Full forward visibility. Special inching control. Exclusive Yale magnetic Cam-O-Tactor for controlled acceleration. High-capacity battery for 8-hour operation without recharging.

Learn how *you* can cut handling costs with the 3,000-4,000 lb. capacity Yale K51W Electric Truck or, send for information on any of the broad line of Yale Industrial Lift Trucks – Gasoline, Electric, LP-Gas, *Worksavers*, Warehousers, Hand Trucks. Wide range of capacities. Write The Yale & Towne Mfg. Co., Philadelphia 15, Pa., Dept. A-463.

THIS IS MANEUVERABILITY! Short Yale K51W works at top speed in aisles less than 10 feet wide. 15° tilt-back improves maneuverability and speeds up operation.

FAST SHUTTLE! Yale K51W unloads this trailer truck in only 12 trips. Takes empties directly to bottling lines to meet tight production schedules.

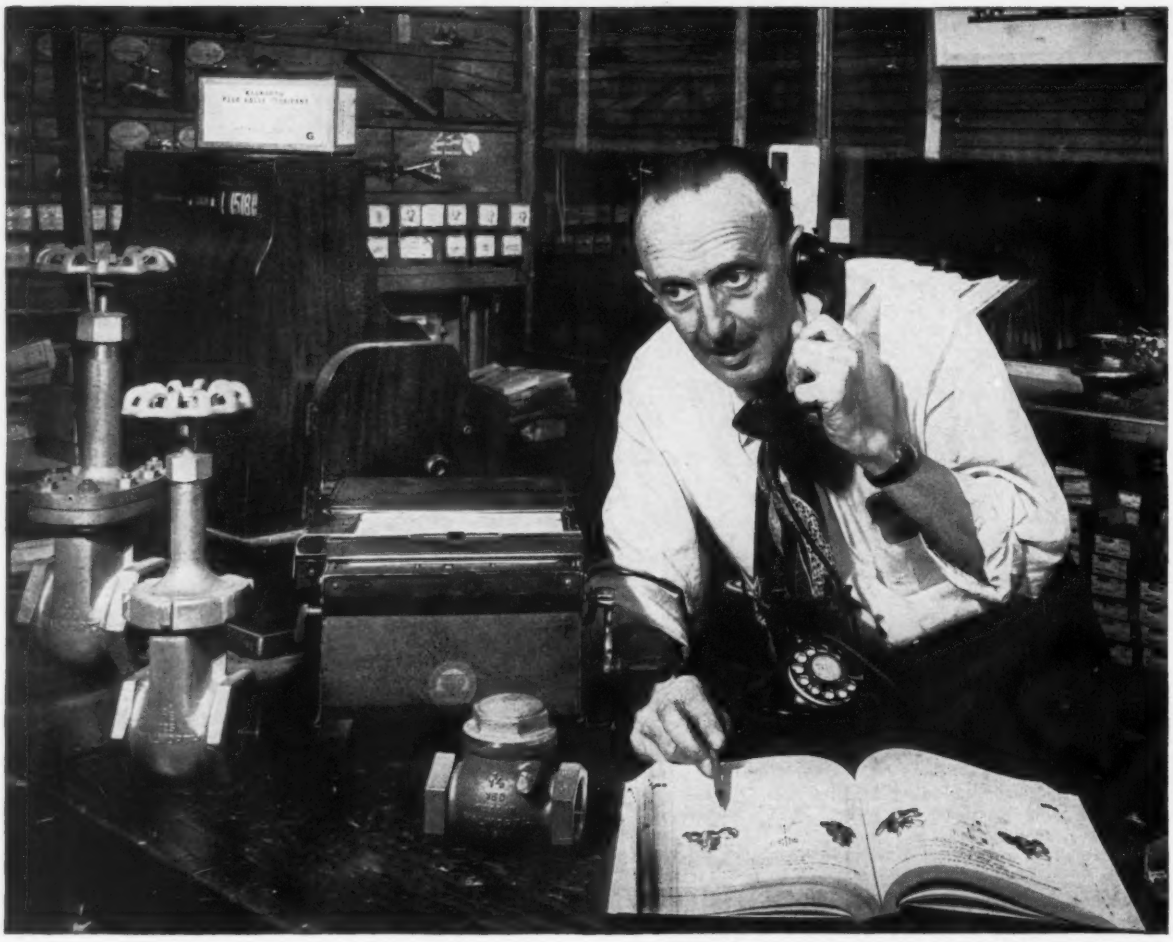
YALE* *REG U.S. PAT. OFF.

YALE & TOWNE

INDUSTRIAL LIFT TRUCKS AND HOISTS

GASOLINE, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL LIFT TRUCKS • WORKSAVERS
WAREHOUSERS • HAND TRUCKS • HAND AND ELECTRIC HOISTS

YALE MATERIALS HANDLING DIVISION, THE YALE & TOWNE MANUFACTURING CO. MANUFACTURING PLANTS: PHILADELPHIA, PA.; SAN LEANDRO, CALIF.; FORREST CITY, ARK.



*Fictitious name used to typify over 400 Walworth Distributors

Here's why it pays to do business with distributors like Mr. Hansen*

Andy Hansen is typical of Walworth Distributors throughout the nation. He has been a distributor of Walworth Valves and Fittings for years. Like Andy, the Walworth Distributor in your area provides these services and savings:

He reduces your inventory costs. He's aware of the valve and fitting needs peculiar to his area. He stocks the products that will best serve your needs. Deliveries are always prompt and economical – emergency orders can generally be delivered within hours.

He offers you application and engineering assistance. His technical experience can be invaluable in solving your particular problems. He has 50,000 Walworth products at his disposal. You can be sure that the items he recommends are exactly right for the job.

He is a double guarantee. His business depends upon providing you with the very finest products and unsurpassed service. Every valve and fitting is backed by his own reputation and that of Walworth – a complete line manufacturer.

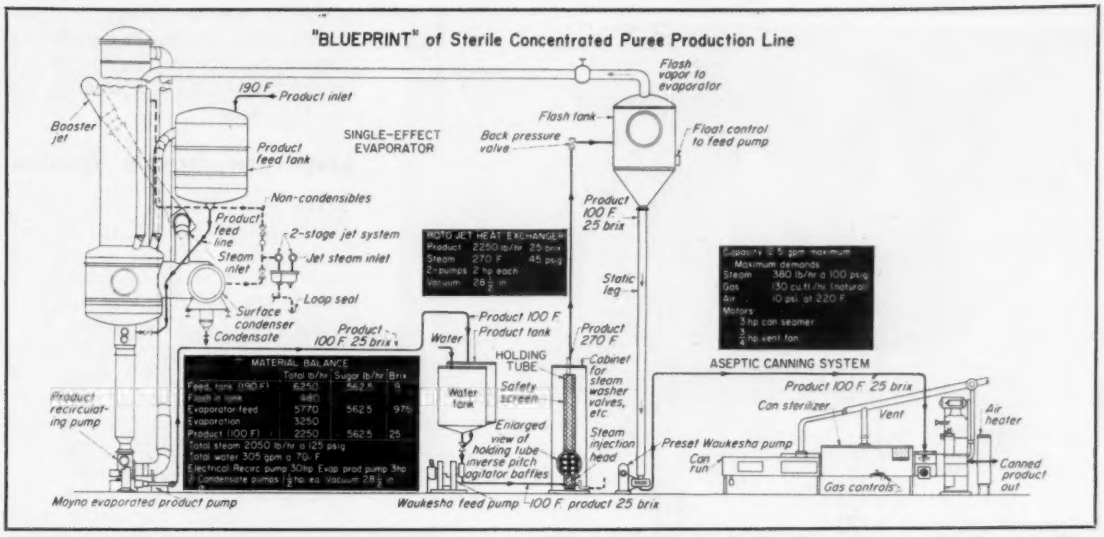
There's a Walworth Distributor near you ready to help. Call on him today.

WALWORTH

valves . . . pipe fittings . . . pipe wrenches

60 East 42nd Street, New York 17, N. Y.

Walworth Company of Canada, Ltd., Toronto



IN NEW LIBBY FACILITY, fruit purees are concentrated at low temperature in evaporator (left), sterilized and quickly cooled in Roto Jet (center), canned aseptically in filler (right).

Better Thermal Process

Guards Product Quality

It's built around new sterilizing unit that employs steam injection for quick heating, vacuum evaporation for fast cooling

PERTINENT PROGRESS toward making natural flavored and colored sterile concentrates from heat sensitive foods has been won at the new Libby, McNeill & Libby, Sunnyvale, Calif., plant.

This facility was specially designed to concentrate pear, peach, and apricot purees. Moreover, all of the products produced last year were of high quality, with no evidence of cooked or thermal off-flavors.

Crux is a new HTST unit (Roto Jet) which employs steam injection and vac cooling to achieve the desired lethal effect.

In the process, it is teamed with a Kelly low-temp evaporator (FE. Oct. '49, p. 76) to provide desired concentration, and a Dole aseptic filling unit (FE. Feb. '51, p. 72) to can the cooled product.

Except for two high temperature points in the process, product is maintained at 90-100F. Feed-in materials are heated to 190F. for pulping and, later in the process, temperature of concentrate is elevated to 270F. for sterilization. However, these higher temperatures are immediately reduced by flashing the product in vacuum chambers. So, being exposed only a short time to this heat, relatively little, if any, appreciable heat damage is incurred.

New Sterilizing Unit

From the evaporator the concentrated product is pumped to the receiving tanks of the Roto Jet. With the exception of start-up and minor adjustments during the operation this relatively new heat exchanger is automatically controlled by recording instruments.

With the exception of pumps and controls, the entire assembly was designed and fabricated by Barmotive Products Inc., San Leandro, Calif. and W. F. & John Barnes Co., Rockland, Ill.

Steam Injection Heating

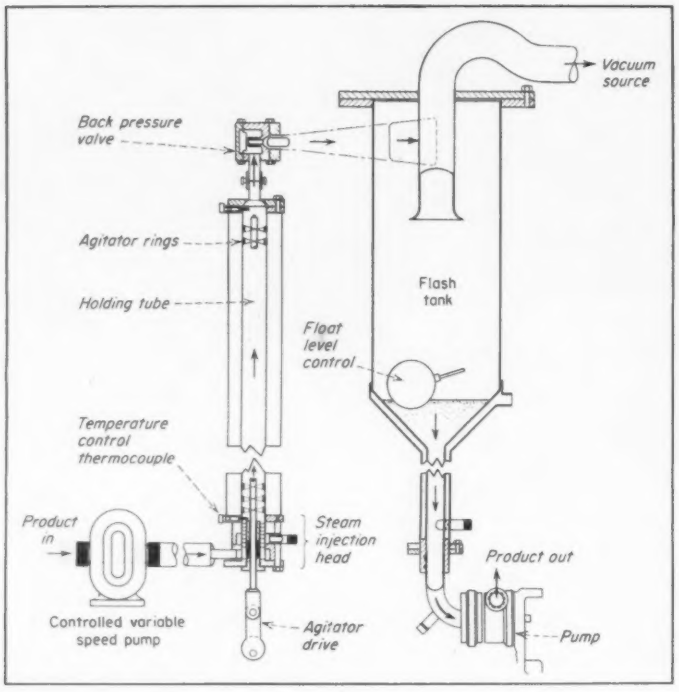
Heart of the unit is the steam injector and its holding tube. In most cases, the latter is specially designed for the product being sterilized.

Volume of product being fed to the sterilizer is controlled by a sanitary float-valve located in the flash tank. It adjusts, by air, the rpm. of the Waukesha feed pump to balance input with output. Discharge pump (Waukesha) is preset at 12.5 gpm. to supply product to the Dole unit at its maximum capacity.

The Roto Jet can be used as a heater, cooler, or heater-cooler combination, as it is in this line. The

W. C. CHEAL and C. R. HAVIGHORST

Respectively, General Superintendent's Office, Libby, McNeill & Libby, San Francisco, and Senior Associate Editor, "Food Engineering"



IN ROTO JET HTST UNIT, product is fed at controlled volume to steam injection head, where it is instantly brought to processing temperature. Then it is held long enough to insure sterility (in agitator equipped holding tube), and discharges into flash tank, where it is quickly cooled by evaporation. Finally, product is pumped to filling unit.

manufacturers report that all moisture added by steam injection is removed at the flash tank, Thus, the product fed to this sterilizing system, exits at the same degree Brix.

There is no heat loss in the unit since there are no heat transfer surfaces. And, since hot surfaces are non-existent, there is no burn-on, to reduce heat transfer rates and, also, that must be removed by cleaning. Injection steam is purified by passing it through a steam strainer, purifier and washer.

How Sterilizer Operates

In operation the unit is first sterilized by running it on water heated to 290F. Sterilizing cycle, as well as initial introduction of product and initial canning, is controlled by a predetermined time period. Change-over from water to concentrate is made at the 3-way valve below the tank. Diluted product is drawn off at the aseptic filler before canning begins.

Product is drawn from storage tank to the variable speed feed pump and is discharged to the steam injection head where it is brought to processing temperature. It is then held in the holding tube for sufficient time to achieve the desired lethal effect. Then, in rapid succession, product is flashed through a back-pressure valve into the flash-tank where it is cooled to 100F. Product then drops through a static leg where a sanitary pump, with preset volume, moves it to the aseptic canning unit.

The Barmotive injection head is essentially a steam jacket surrounding a small section of the lower part of the holding tube. Steam is injected into the product through perforations in this tube. The heated product is turbulently agitated by inverse pitch baffles to prevent channeling and to insure uniformity of holding period as it moves upward through this tube. In some units, agitator-baffles are mechanically reciprocated and act as both tube scrapers and baffles.

Temperature of product is read at the exit of the injector in the holding-tube. The temperature recorder-controller, acting through a steam control valve, continually records and controls this temperature by regulating the amount of steam entering the injection head.

Evaporator Provide Vacuum

The recompression type, falling film evaporator was selected because of economics as well as product quality. Its evaporating capacity of 4000 lb./hr., balances well with production volume of the pulper. And, while maximum steam requirements are specified at 2050 lb./hr., it normally utilizes but 1935 lb./hr. This provides the surprisingly low ratio of 2.0 lb. of water evaporated for each pound of steam used.

A surface condenser, rather than the conventional barometric type, utilizes water from the company's well. This water is then returned to process for reuse.

An additional efficiency is integration of the evaporator with the Roto Jet It provides vacuum and receives all vapor from the flash tank of this heat exchanger, eliminating the need for an individual vacuum source, an additional condenser and its attendant water and steam demands.

A built-in cleaning system is provided in the evaporator. It may be completely sanitized without requiring plant personnel to enter it except for visual inspection. During the operating season it was cleaned in minimum time. There was no evidence of burn-on, or solids build-up in any part of the unit.

The evaporator yields the following approximate amounts of concentrate depending on the deg. Brix of the feed-in material:

12.5 Brix in-feed yields 7.24 gpm. of 25 Brix product.

13 Brix in-feed yields 7.85 gpm. of 25 Brix product.

14 Brix in-feed yields 9.2 gpm. of 25 Brix product.

15 Brix in-feed yields 10.8 gpm. of 25 Brix product.

16 Brix in-feed yields 12.8 gpm. of 25 Brix product.

Better Can Sterilizing

Many engineering improvements have been incorporated in the aseptic canning system since its introduction 7 yr. ago.

The unit pre-sterilizes cans, fills them with sterile product and closes them with sterile lids, all in an atmosphere of superheated steam.

Temperatures of product and all critical thermal sections of the unit are automatically controlled by a recording instrument.

Can sterilizing ability has been improved by increasing from three to six the number of gas burners. Unit now more efficiently transforms saturated to superheated steam which, at approximately 475F., sterilizes the cans as they move toward the filler.

The new filler (patents applied for) is probably the most outstanding engineering advance in the unit. Formerly it was a slit-type filler, which operated continuously as cans passed underneath it. The new one was designed to handle heavy pastes and particulate products. It evidences an unusual engineering concept and fills exactly and, of equal importance, leaves a precise, but adjustable head-space.

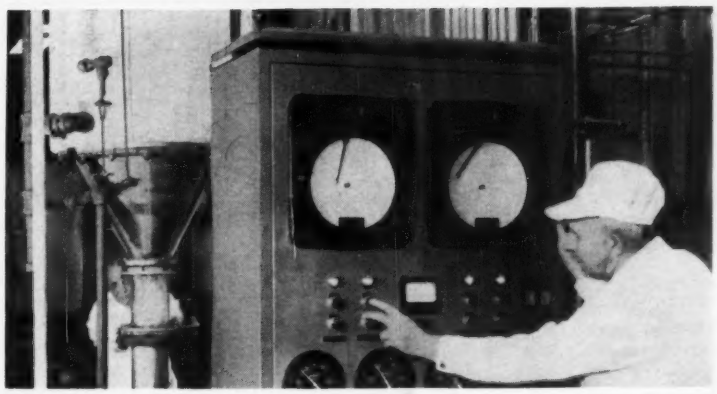
Operating on a cam principle, the rotor lobes act as port seals. They alternately seal, then open the ports to discharge products into cans positioned below them on the can run. This cam-like operation is synchronized with the can-conveyor helix so product discharge can be exactly regulated. The filler used in Libby's line has only three discharge ports for No. 10 cans.

Wider Use Predicted

This new filler opens another potential field for the aseptic system. The former, slit-type filler limited this process to liquids. The new one is designed to fill both liquids and liquids having particles.

As another safety measure, a can-lid, sterile air-cooling system has been added to the seamer. Lids are sterilized at approximately 400F. then quickly cooled by this 220F. air before they are seamed on to cans. This new cooling method obviates any possibility of damage to the lid gasket-compound or to lids, especially those that are lacquered.

Finally, the new sterile-air system displaces residual steam from the can headspace and obviates paneling. Air is provided from the plant compressor system at 60 psi, is filtered (Dollinger filter) then reduced to 20 psi. and heated initially to 440F. to insure its sterility. It then is cooled to 220F., before introduction to the inclosed lid section of the seamer. Headspace vacuum is controllable by the amount of air introduced. For No. 10 cans 10 to 12 in. vacuum is desirable. —*End*



FIRST DRYING STEP employs special evaporator in which whirling rotors throw liquid gelatin against heated walls to form thin film. This unit removes more than half of water.

3-Phase Drying Improves Gelatin

Heat damage is minimized by using falling film evaporator to remove 60% of moisture, a heat exchanger to chill, and a continuous dryer to finish

CHIEF PROBLEMS in production of high-quality gelatin are to concentrate and dry the liquid (1) with minimum exposure to heat, and (2) least handling.

American Agricultural Chemical Co., Detroit, has solved these problems with a 3-phase drying system.

The liquid is first concentrated and partially dried in a Turba-Film processor (Rodney Hunt). It is then cooled in a Votator heat exchanger (Girdler), and fed to a continuous dryer.

Steps in Operation

Manufacture of gelatin consists of converting pig skins and ossein into a liquid, then concentrating the material to a solid.

In the preliminary steps, AAC follows standard practice. The material is passed through vats, extractors, filters, and measuring devices, and goes into a 3-stage Yaryan pan (modified to company specifications). Here, preliminary evaporation is carried out.

The gelatin is made in separate batches according to type and grade desired, but passes through the various stages in a continuous flow.

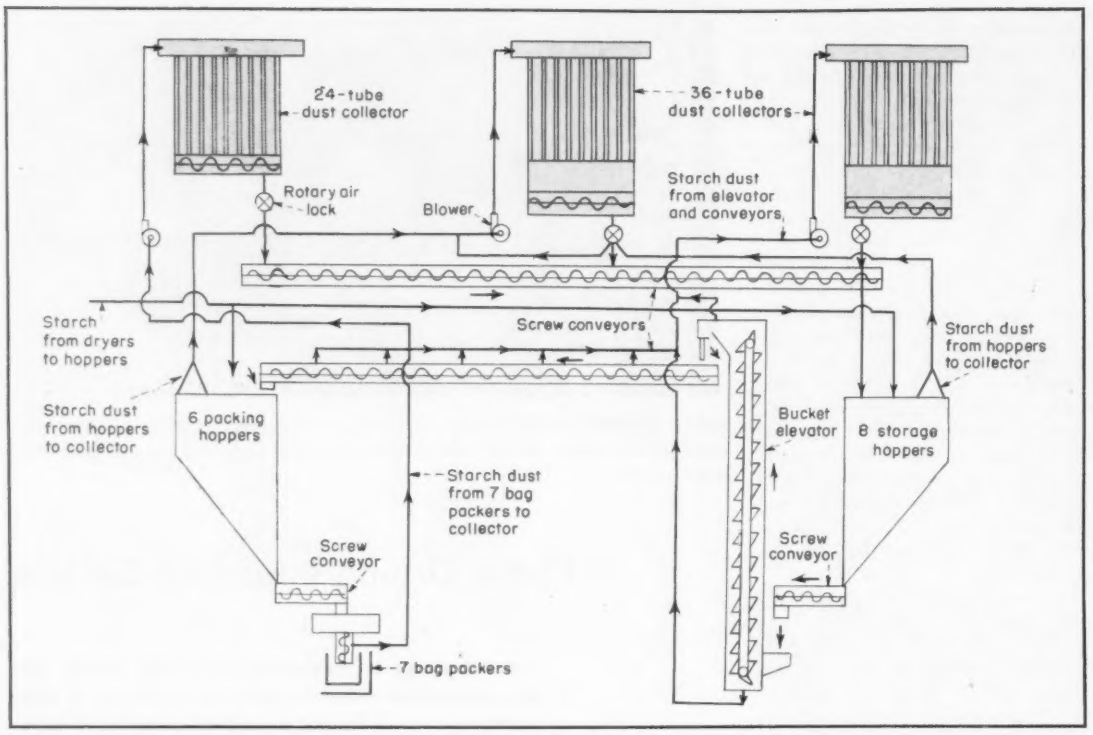
The 3-phase drying operation was designed to handle 2,500 lb./hr. of liquid, and turn it into completely dry "noodles" ready to be packaged.

Entering the processing unit, the liquid is whirled by rotor blades against the heated walls, and spirals down in a thin film. Because of absence of hydrostatic head, there is no elevation in boiling point. And with the blades constantly in motion, exposure of any particle to heat is brief. There is no "burn-on" or other degradation of product.

Outlet of the processor is equipped with a transparent plastic sleeve of about 7 in. dia. through which the effluent can be observed.

The unit removes an average of 1,600 lb./hr. of water from the 2,500 lb. of liquid. Solids in the influent varies from 18 to 35%, with an average of 21-22%. Viscosity of influent averages 16, and that of effluent 30.

Concentrate then passes directly to the heat exchanger, which chills and extrudes it in the form of long noodles onto a conveyor belt. Discharge end of belt swings from side to side to distribute its load onto a stainless mesh-type conveyor. This carrier moves the gelatin through a steam-heated continuous dryer, and the dried gelatin is conveyed directly to the packing department.



SAFER, DECENTRALIZED dust-control is detailed in this schematic of starch flow in CPR's packing building. Dust collectors are mounted on roof.

Efficient Dust Snatchers

—trap starch dust at more than 50 sources and send it into decentralized system for maximum safety and good housekeeping. Other benefits cited

IS YOUR dust-collecting system really doing all that it ought to do?

—A system that definitely does is the one operated in Corn Products Refining Co.'s Argo, Ill., starch-packing building.

It's hailed as an advanced pattern of performance. So whatever your dust-collecting problems may be—and however big or small your operation—you might well take a leaf or two from CPR's book.

Top safety is the company's main concern. And to achieve it, CPR engineers have gone all out to minimize the chances of starch-dust explosions.

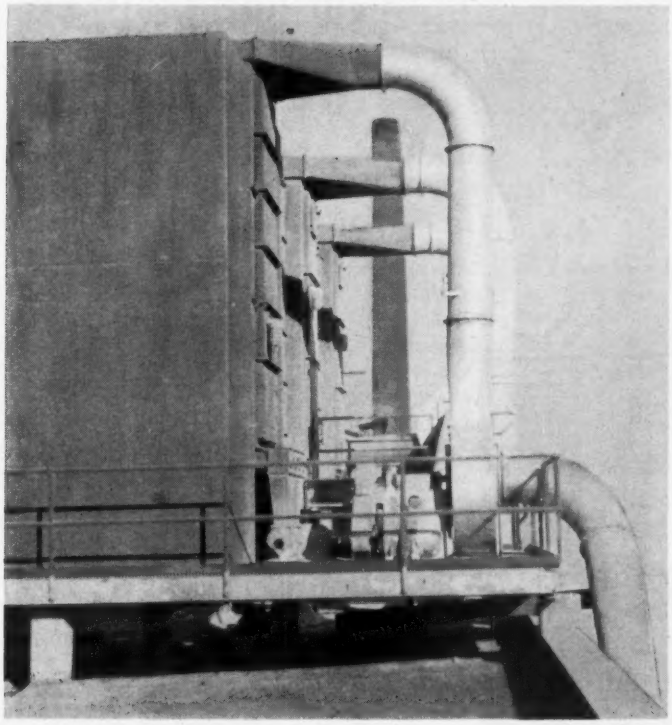
Key move here was the switch from a centralized to a decentralized collecting system. Thus, the dust is now systematically trapped at more than 50 sources and then forwarded into three Day-type ("AC") collectors employing the patented Hersey methods of cleaning.

One unit (24-tube) has been set up to collect the dust from seven bag packers, another (36-tube) from six packing and eight storage hoppers, and still another (36-tube) from enclosed screw conveyors and bucket elevators. Benefits—

. . . The system is hazard-proof. The three collectors are located, as a further safety precaution, on the roof of the building. They're fully automatic, with continuous cleaning facilities. Thus, uniform pressure drops and dust pickups are assumed at all the dust-generating sections throughout the starch-handling system. And chances of dust-laden air being discharged into the building are eliminated.

. . . It's more efficient. If one collector should break down, the other two will keep operating. Each collector is installed within an insulated housing (½-in. cork-asphalt mixture) to reduce moisture condensation that would subsequently lead to plugging

JOHN V. ZIEMBA
Associate Editor, "Food Engineering"



THREE COLLECTORS are advanced, insulated units—one 24-tube, two 36-tube. Access doors and ports permit ready inspection and maintenance.

of collecting tubes. Moreover, screw conveyors discharge accumulated starch dust, air inlets are streamlined, sanitary blow rings are self-adjusting, and ports are interchangeable.

. . . It's easy to maintain. Interiors of the collectors are readily accessible for inspection and maintenance through 2- and 4-ft. wide access doors, as well as four 1½x1½-ft. ports.

. . . It's reduced housekeeping requirements. Filter tubes (10-ft. tall by 7-in. dia.) are constructed of ⅛-in. thick 100% virgin-wool felt that prevents passage of dust through closely matted fibers. Clean, dust-free air is discharged from the battery of tubes so air surrounding moving parts of filter is dust-free. What's more, negative pressures (−0.1 to −2.0 in.) are maintained at all dust-generating sections throughout the entire starch-handling system.

. . . It's a space-saver. Installation is more compact. For the normal filtering rate here is 12 cu. ft. of air per sq. ft. of cloth—averaging about six times higher than formerly.

Operation Closeup

To get an idea of the precautions to which CPR went to attain 100% dust control, let's follow the starch and starch dust movements through the starch-packing building:

Starch is delivered by screw and pneumatic conveyors from dryers (located in two other buildings) to six packing (70,000 lb.) and eight storage hoppers (50,000 lb.). Suction hoods over these closed hoppers remove attendant starch dust through 6- to 8-in. ducts feeding a tapered header (4 to 24 in.) that supplies a 36-tube dust collector.

Flexibility Insured

The starch-handling system is flexible. That is, product is directly gravity-fed from six packing hoppers to machines that fill multi-wall bags, or it is delivered from eight storage to six packing hoppers by a series of two bucket elevators and a dozen 18-in. screw conveyors driven by explosion-proof motors.

Collecting points are spotted throughout the conveying systems wherever dust might be raised. For example, each elevator leg has a suction connection in its boot and also at its top. And suctions are installed at dust-generating sections on screw conveyors. The suctions connect to a series of ducts feeding a 36-tube dust-collector.

Dust is picked up at bagging stations through 3-ft. slotted suction hoods hooked up to 6-in. ducts and the 24-tube dust collector.

How Collectors Work

Actual amount of air required to pull the dust via the suction hoods, through the ducts, and into the filter tubes is surprisingly low—approximately 12,000 cfm. for each of the 36-tube units and 8,000 cfm. for the 24-tuber.

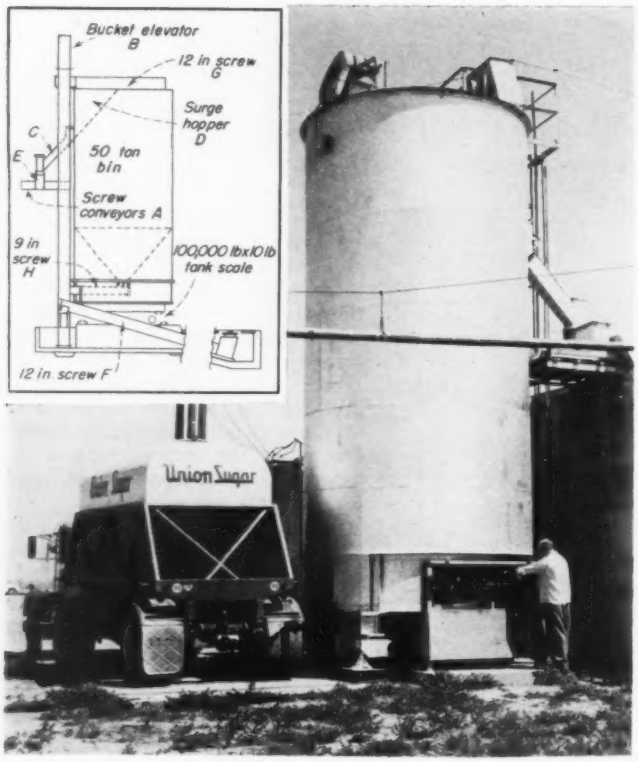
Separate centrifugal blowers supply the high pressure air to reverse blow rings for filter-tube cleaning. The 45-in. fan for the 24-tube unit is driven by a 7½-hp. motor. And the 54-in. fans employed for the 36-tube units are operated by 10-hp. motors.

Rings are self-adjusting to contour of filter tubes to assure contact between reverse air orifice and tube. They travel up and down a tube at a rate of 15 ft. per min.

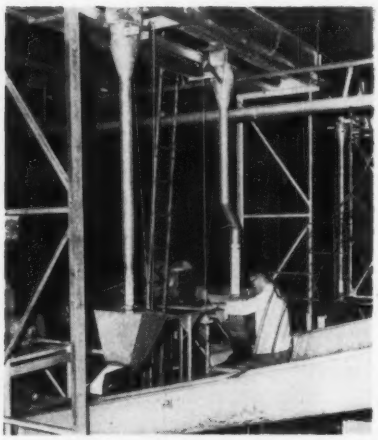
Dust-laden air is carried into tubes via 4¾-ft. long inlets. These taper from round to square—24-in. dia. to 8x8-in. Thus, they serve to eliminate deposition of dust within the filter-inlet header. Fan delivers dust-laden air downward into the tubes to prevent settling of dust particles.

Starch dust collected in each filter is discharged through a continuous rotary air-lock (10-in.) into a 9-in. screw conveyor feeding hoppers.

Each of the two 36-tube collectors is bottomed with a trough-type hopper to serve as a surge ahead of the discharge-screw conveyor driven by 2-hp. motor. Clean air is discharged from the tubes through a 20-sq.ft. open grating. —*End*



MOUNTED ON SCALE, this 100,000 lb. bin and conveyor system obviates manual handling of sugar in strawberry packing operation.



VIBRATING FEEDERS (above) receive sugar from screw conveyors (top), proportion it to berries below.

Bin-on-Scale Speeds Sugar Check

Precise weight of sweetener consumed in berry processing is read directly—despite widely varying rate of operations . . . System aids both quality control and accounting

MECHANICAL HANDLING of sugar for a strawberry packing line presents some unique problems.

The process must be paced by the fluctuating rate at which berries can be inspected. This means that, since sugar is added at a fixed ratio by weight, the berry-sugar blending stations demand the sweetener at widely varying rates.

Also, packout—weight of finished product less weight of sugar used—cannot be determined by direct weighing of the berries. For an accurate figure, weight of sugar must be known.

OLIVER C. GOODBROD

Production Manager, Driscoll Strawberry Associates, Inc., San Martin, Calif.

To provide a most efficient supply for its packing lines, Driscoll Strawberry Associates installed a fully automatic handling system in its new Santa Monica, Calif., strawberry plant.

The 100,000-lb. storage bin is mounted on scales providing convenient and precise means of checking inventory at any time.

This system has a circulating conveyor consisting of twin 9-in. dia. screws operating in parallel troughs—(A) in drawing. Direction of rotation and hand of flights are chosen so the sugar moves in opposite directions in each trough. At trough ends, paddles flip it through ducts from one trough to the other. The screws can feed sugar to process at 10 tons/hr., and can circulate it at a higher rate.

In designing the structure, careful consideration was given to the effect of siesmic or wind loads. Height of tank was kept as low as possible commensurate with adequate storage capacity. This was achieved without use of vertical restraining members at bottom of bin. Bumpers limit side sway of bin and scale to ½ in. in any direction. These are firmly attached to the concrete foundation slab.

Mounting the 25-ft.-high bin on a scale created a number of engineering problems. Since it must be free to move up and down, flexible joints had to be provided at several points. Conveyors and their driving motors, located at top and bottom of the bin, are rigidly attached to it.

At the points where sugar moves to or from bucket elevator (B), flexible rubberized cloth joints are used. A third flexible joint is located where spout (C) from surge hopper portion of storage bin (D) enters box (E) that feeds the circulating conveyors. *Turn to p. 97*

"We find Armorply temperature control rooms are easy to assemble, give us a clean, easy-to-maintain operation"

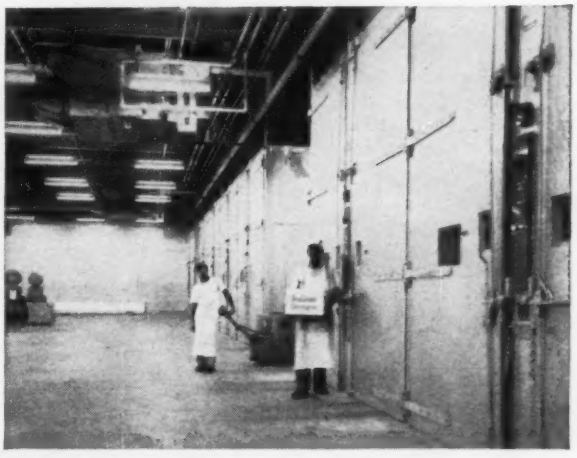
says **STANFORD E. ABEL**, vice president,
Giant Foods, Inc., Washington, D. C.

Armorply, metal-faced Weldwood Waterproof Plywood, in large panels that are a snap to assemble in wall sections, has helped streamline Giant Foods warehousing operations. The sturdy aluminum-faced Armorply panels, which have a high impact resistance, are 100% vaporproof, will not absorb odors, are easy to clean and require virtually no maintenance. Armorply, made by United States Plywood Corporation, can be specified with faces of aluminum, stainless steel, zinc-bond steel, high-pressure laminates or other metal and plastic faces with a variety of cores. Armorply has many industrial and structural applications.

Banana room of Armorply, one of 12 rooms installed in the Giant warehouse. Armorply, which received full approval of the U.S. Department of Agriculture, has been used by Giant in rooms of varying temperatures – from 36° for meat storage to tropical conditions for ripening bananas. In banana storage rooms, the "air-tight fittings enable us to let the banana do most of its own work in the ripening process, using its own gases. Armorply affords us the same efficiency in temperature control either under high temperatures or refrigeration," says Mr. Abel.

Armorply produce rooms back on to freight sidings and truck loading platforms. Designed by V. C. Patterson and Associates of York, Penna., the Armorply rooms are expected to help Giant cut costs by centralizing its warehousing operation in one highly efficient unit. "Good temperature control is most important in the produce and meat field," Mr. Abel points out. "With Washington heat waves sometimes reaching a humid 100 degrees, we know we can count on Armorply to do the job for us."

"Armorply rooms are quicker to put up than the normal room of concrete, plaster, and cork," Mr. Abel says. The sturdy, modular Armorply panels never need painting, "and we can maintain the rooms vermin-free and clean at all times, which eventually will more than pay for our costs. There's no chance for dirt, vermin, or odor to enter," Mr. Abel concludes.



Newly completed produce section of Giant Foods' warehouse in Landover, Md. The 8-acre warehouse, when finished, will house nearly 120,000 sq. ft. of Armorply temperature control rooms for storage of meats, groceries, vegetables and fruits. The Giant chain, which has 37 stores in Maryland, Virginia and Washington, D.C., tested Armorply in one of its stores before deciding to adapt it for its new warehouse. In addition, 6 new stores "will be completely Armorply in all the temperature control boxes," Mr. Abel reports. As reconstruction of older Giant stores becomes necessary, Mr. Abel predicts Armorply will play a major part in the work. Armorply is distributed by ANNAPOLIS YACHT YARD, FREEZER BOX DIVISION, Annapolis, Md.

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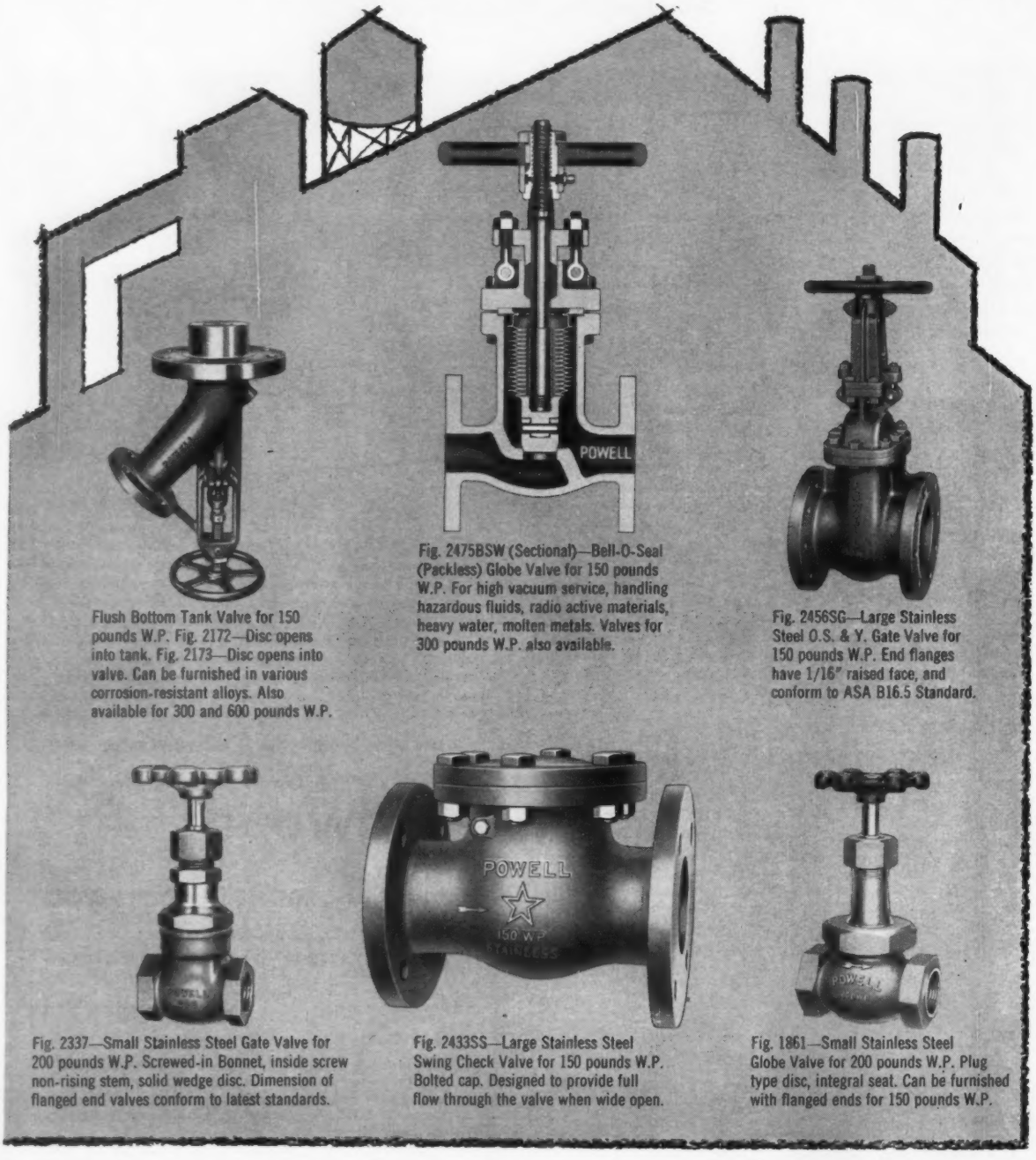

Flush Bottom Tank Valve for 150 pounds W.P. Fig. 2172—Disc opens into tank. Fig. 2173—Disc opens into valve. Can be furnished in various corrosion-resistant alloys. Also available for 300 and 600 pounds W.P.

Fig. 2475BSW (Sectional)—Bell-O-Seal (Packless) Globe Valve for 150 pounds W.P. For high vacuum service, handling hazardous fluids, radio active materials, heavy water, molten metals. Valves for 300 pounds W.P. also available.

Fig. 2456SG—Large Stainless Steel O.S. & Y. Gate Valve for 150 pounds W.P. End flanges have 1/16" raised face, and conform to ASA B16.5 Standard.

Fig. 2337—Small Stainless Steel Gate Valve for 200 pounds W.P. Screwed-in Bonnet, inside screw non-rising stem, solid wedge disc. Dimension of flanged end valves conform to latest standards.

Fig. 2433SS—Large Stainless Steel Swing Check Valve for 150 pounds W.P. Bolted cap. Designed to provide full flow through the valve when wide open.

Fig. 1861—Small Stainless Steel Globe Valve for 200 pounds W.P. Plug type disc, integral seat. Can be furnished with flanged ends for 150 pounds W.P.

For every flow control problem Powell offers more kinds or types, available in the largest variety of metals and alloys to handle every flow control requirement. Powell distributors are located in all principal cities and maintain inventories to fill almost any need. For special engineering problems, write direct to:

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Sugar is unloaded from bottom-dump trailers at 20 tons/hr., using 12 in. screw conveyor (F) with side-entering feeder. A bucket elevator (B), with 10x6 in. metal buckets on rubber belt, raises the sugar to 12 in. distributing screw, (G) at top of bin.

This conveyor has an open bottom trough so that the requirements of the surge hopper are satisfied before any sugar goes into the storage bin.

From this surge hopper, sugar flows through a spout to circulating conveyor (A), which automatically accepts it as required by the packing process.

When no truck is being unloaded, screw (H) feeds sugar to the boot of the bucket elevator. This raises it to screw (G), which fills the surge hopper. High and low level pressure-actuated switches, located on the surge hopper, control conveyors required for moving sugar from the bottom of the bin.

Accounting Is Important

Net weight of berries fed to the process is determined by weighing each pallet-load (deducting tare) before it is dumped. Berries are washed, inspected to remove imperfections or foreign material, size graded, and sliced (if desired). Then sugar is added, the amount combined with the berries being in a definite proportion on a weight basis.

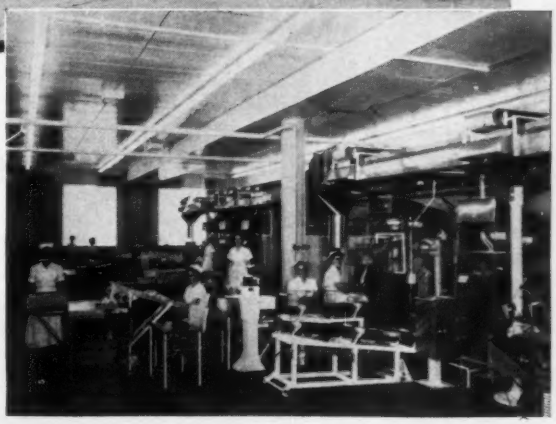
Strawberries get a preliminary grading in the field when they are picked. Pickers discard berries of undesirable quality. If they become careless in this grading, the inspectors at the plant must remove these berries on the inspection belt. This places an added load on them and slows down their part of the line.

The term "packout" refers, as stated, to weight of fruit actually blended with the sugar. This is important from an accounting standpoint.

Packout weight cannot be ordinarily measured by direct weighing. However it is the weight of the finished product less the weight of sugar added. To obtain a truly accurate figure, the weight of sugar used in the fruit must be known. This is read on the scale beneath the bin.

Credit for the design goes to Union Sugar Div. of Consolidated Foods, Inc. And Link Belt Co. engineered its construction, producing the equipment and erecting the system. *End*

ALUMINUM solar shades, plate glass entrance are features of $1½ million plant.



PACKAGING and production areas have walls of structural face tile, precast slab ceilings, tile floors. Special feature is 2x4-ft. reinforced concrete beams of 40-ft. span that support slabs.

Modern-Plus Plant

Frito's new Houston facility called model structure

HAILED for its striking design, advanced construction, and efficient layout, The Frito Co.'s 24,000-sq.ft. Houston, Tex., plant merits a top spot among today's new food plants.

Built to meet the increasing demand for its products in Southeastern Texas, the new facility can produce and package 2,000,000 units weekly, four times former volume.

An unusual feature of its construction is the 2-in. air space between inner and outer curtain walls to insure dryness.

Exterior of front is tan face brick, with matching clay tile for side and rear walls. Plate glass set in aluminum forms the entrance area, with movable aluminum solar shades at all windows across front.

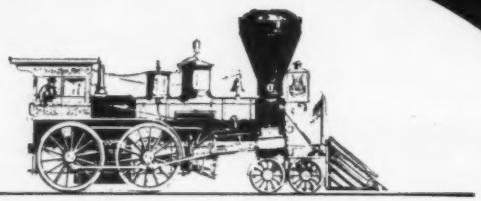
Roof is of precast concrete slabs joined to reinforced concrete beams of 40-ft. spans. These 2-ft. thick by 4-ft. wide beams are supported on concrete pillars spaced throughout the building.

The main building has four sections: Office and employee facilities that extend across front, production, warehouse, and shipping.

Production area is completely enclosed by structural face tile walls and metal doors, making it practically fireproof. Forced air from blowers on the roof change air every 2 min. Fluorescent lighting is used throughout the structure.

Two major processing innovations feature the new plant. An air lift system unloads corn from box cars or trucks and deposits it in storage bins. And a flame peeler is used on spuds for firm's chips (Ta.Tos).

A 10-ft.-wide loading dock extends for 141 ft. along south side of plant. The dock has a slab roof extending 2-ft. beyond its edge. Asphalt paving extends 40 ft. from sides and back of building. *End*

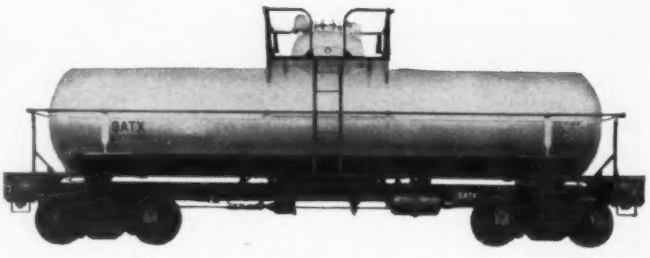


museum pieces are for museums

In 1869, this locomotive was the last word. Today, it is a museum piece.

Not so, your product. If it were, you'd be in the museum business or out of business entirely.

But, if you ship a liquid in bulk, what about the package—the car in which your product goes to market?



Packages are for selling—whether they are on a shelf or on a railway siding. Your product deserves the best package you can find for it.

If your product is a liquid shipped in bulk, GATX builds or can build just the package for it—a tank car that protects your shipment and promotes your good name.

GATX operates the cars for you, knows where they are, keeps them on the move and maintains a nationwide network of shops for their service and upkeep.

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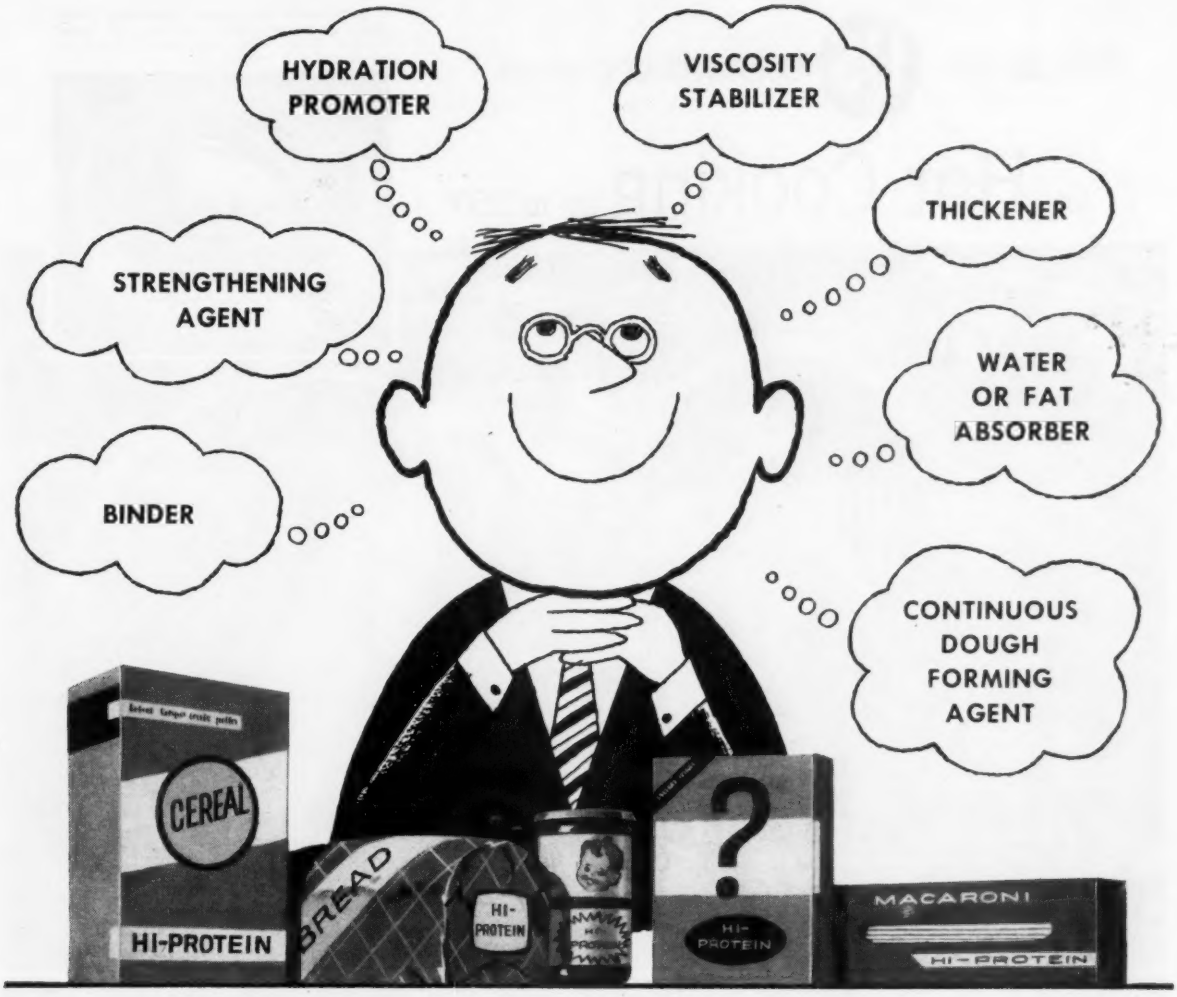

PRO-80 gives you all these processing benefits ...plus **80%** wheat protein for food enrichment

PROCESSING BENEFITS

Thickening, strengthening, binding and other functions of Pro-80 Vital Gluten give you numerous opportunities to overcome production problems—or, to create entirely new food products and improve existing ones.

PROTEIN ENRICHMENT

As a low cost source of concentrated protein, Pro-80 is ideal for enrichment of numerous foods. And, with shoppers becoming increasingly conscious of health and diet, protein enrichment is more of a sales stimulant than ever.

PRO-80 PROVED IN MANY FIELDS

Some processors already have found profitable uses for Pro-80 in:

- breads
- macaroni products
- cereals
- dog food
- health foods
- baby foods
- baked foods
- many others

Its potential merits investigation in many other food fields.

PRO-80 IS 80% PROTEIN Pro-80 Vital Gluten (80% pure wheat protein on a moisture-free basis) blends smoothly, hydrates rapidly, is bland and compatible —adds no taste or odor of its own. Packed in 100-lb. multi-wall paper bags.

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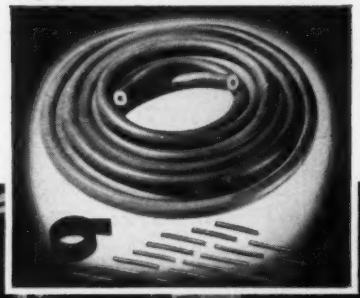
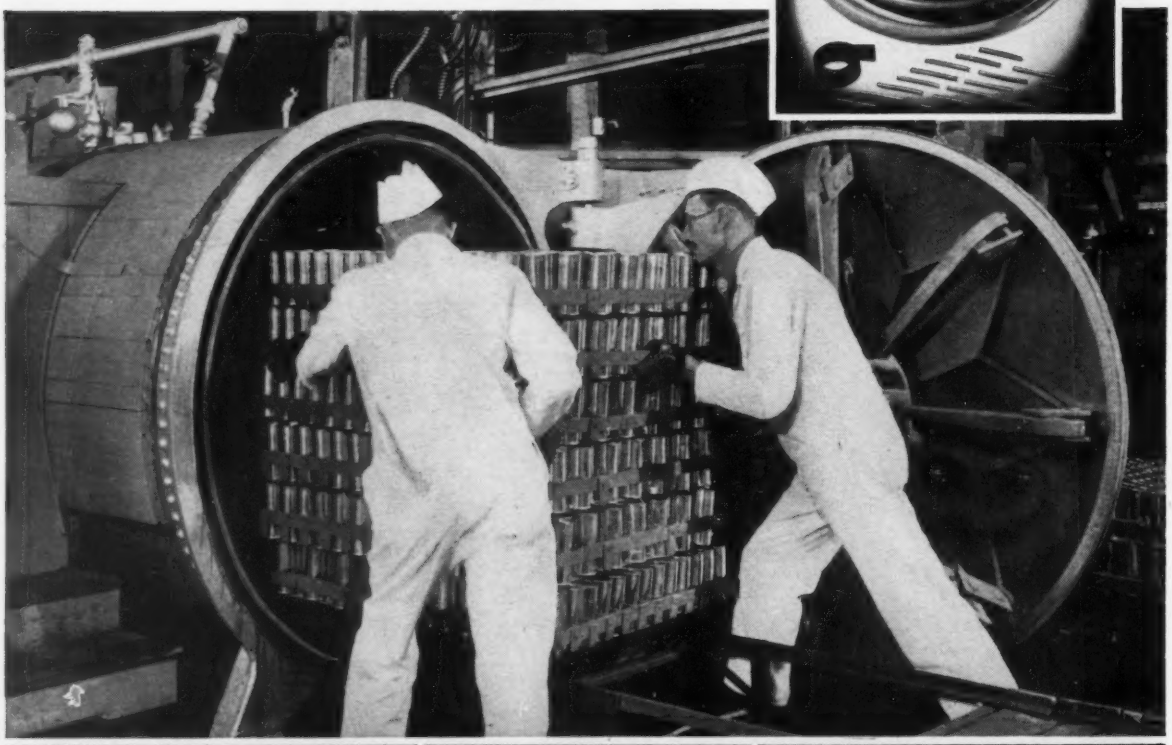
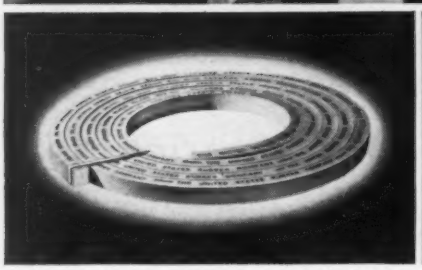
US RUBBER Cooker Door Gaskets

For Hot Cooking up to 350°

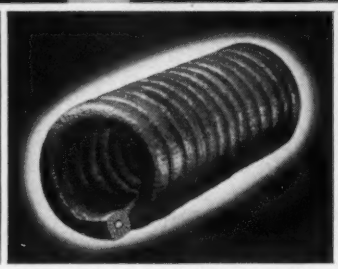
U. S. Eclipse® Red Tubular Gasketing (Style #803) is recommended especially for large exhaust heater doors and kettles where a large gasket is needed.



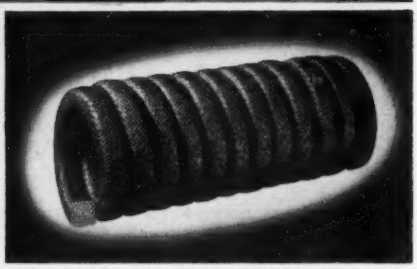




U. S. Peerless® Canvas Pump Packing (Style #463) is for use on inside packed pumps against hot or cold water, and for end rings in hydraulic sets. The method of manufacture reduces swelling to the minimum.



U. S. Low-Pressure Spiral Steam Packing (Style #381) is for use on rods and plungers against low and medium pressure steam and hot and cold water. Will not become hard in service. Lubricated and graphited.



U. S. Rainbesto® High-Pressure Rod and Plunger Packing (Style #101) handles high-pressure steam and air up to 500 degrees F. It has a non-hardening cushion, treated with heat-resistant lubricants and preservatives.

U. S. Cooker Door Gaskets are especially designed for the food-processing industry... ideal to use on retort doors for pressure cooking, even up to 350°F. Being chemically inert, they also are fine gaskets for vats and kettles when cooking or processing soups, spaghetti, vegetables, pre-cooked meats, vegetable shortenings, and detergents. In all, U. S. Cooker Door Gaskets provide the food industry with a maximum of cooking cycles, lowering costs by eliminating the need for frequent replacements.

Insist on U. S. Cooker Door Gaskets when replacing your present ones. There are 28 strategically-located "U. S." District Sales Offices to serve you or your supplier. Or write United States Rubber, Mechanical Goods Division, Rockefeller Center, New York 20, N. Y.

US RUBBER Mechanical Goods Division

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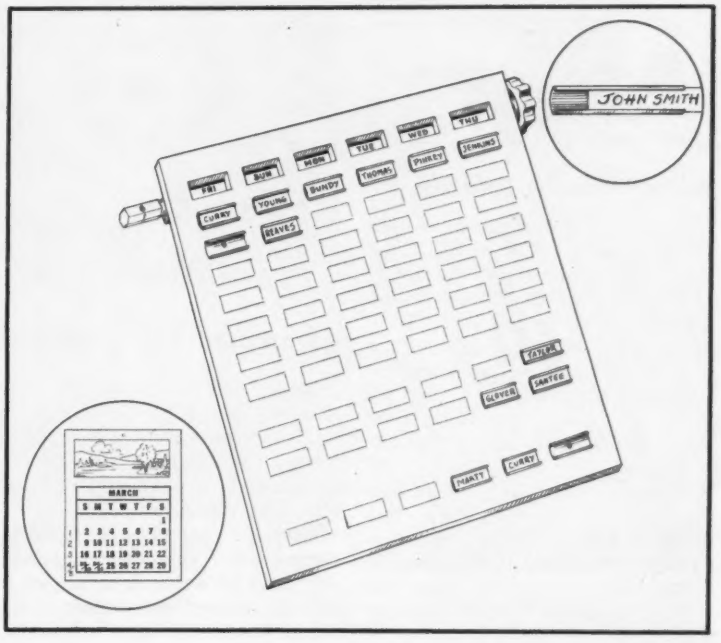
Board and Calendar Solve Day-Off Problem



Our plant operates 6 days a week but the employees work only five. So we have an additional man for each five, who relieves the others on their day off.

Due to this arrangement, workers have different days off each week, and they get a 3-day weekend every six weeks.

But this setup resulted in a lot of confusion when the men attempted to plan ahead, especially for fishing trips, etc. on the long weekend.

Now, however, we have eliminated all the guess work, and each employee can determine in a few seconds exactly what day, or days, he will have off as much as a year ahead.

It took just two things to lick the problem—a board (see illustration) that is mounted on a wall in a convenient location, and a calendar.

Six slots were cut in the top of the board to show the days of the week the plant operates (ours is closed Saturday, so this does not appear).

A 6-sided roller was prepared and the sides numbered 1 to 6. Then, on side No. 1 were placed names of work days, starting with Sun., in such positions that they coincide with slots in the board when roller is mounted behind it.

On side No. 2, start week with Mon. But, since we do not work on Sat. the 6th day here is Sun. Side No. 3 starts with Tues., and so on to No. 6 which starts with Friday. A knob is attached to other end of roller to facilitate turning it.

Now for the calendar. Starting with a specific week, place the number 1 beside Sunday. Then 2 beside the next Sunday, and so on until the number 6 has been reached. Then start over. This will divide the year into 6-week periods (see inset).

Names of workers (divided in groups of 5 regulars, 1 relief man) are listed horizontally across the board, with each name directly under one of the slots. This enables the worker to look above his name and find the day of the week he is scheduled to be off.

Each week, roller is moved $\frac{1}{6}$th of a turn—the number on its side corresponding to the one for that week on the calendar. If a worker wants to look ahead (or back) he has only to turn the roller to the number of week he is interested in.

Now to see how the board works: With roller on No. 6 as shown, workers in second column have Sunday off and work the next 5 days. Those in the next column have Mon. off, etc. Men whose names appear in the left hand column have Fri., Sat., and Sun. off.

This board can be used in any plant with 6 or more employees, provided it operates 6 days with the men working 5.—*Frank P. Grzyb, Foreman, Hall Baking Co., Detroit.*

Light Quickly Indicates Balanced Scale

Our large platform scale was installed in such a manner that it could only be read from inside the adjoining building. Thus in loading specific weights of feed onto a truck for experimental feeding to small groups of cows two men were required—one to fork, and one inside to watch the scale beam.

Here's how we were able to eliminate the second man:

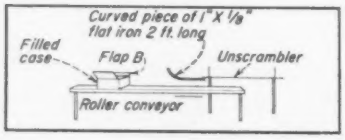
A light fixture was mounted in a position visible to the person working on the outside. And a small mercury switch was attached to the counter-balance end of the scale beam. With an extension cord, the switch and light were connected to a 110-220v. outlet.

Now, when the scale beam comes into the balanced position it actuates the mercury switch causing the light to come on. This tells the worker that the truck is loaded.

The reason for placing the mercury switch on the counter-balance end of the beam is the ease with which it could be balanced. Also, there was

CUT OUT AND FILE

less danger of breakage. However, it could be placed in any position on the beam where there is enough movement to actuate it.—*Cecil Conley, Asst. Dairy Specialist, Clemson Agr. College, Clemson, S. C.*



Solves Uncasing Problem

Here's a little idea that has helped us a lot and I think it may be of value to someone else.

We at Francis C. Stokes Co. can a great deal of tomato juice. Then in the winter we uncase and label the cans. In the labeling operation the cases are placed on a roller track by hand and move to the unscrambler where another man dumps them by hand.

Flaps are opened by the man putting cases on the roller track. But between that point and the unscrambler they turn back making it difficult for the man dumping the cases to accomplish this by turning them over.

We solved the problem with an iron strip ⅛x1 in. 2 ft. long (see drawing). The strip was curved and mounted on the unscrambler. Now, as the case approaches the unscrambler, the flap (B in drawing) is folded back enabling operator to empty the case by turning it over.—*David B. Ewen, Foreman, Francis C. Stokes Co., Vincetown, N. J.*

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Just send us the facts about your idea and its application. And include a free-hand sketch or snapshot to show how it works.

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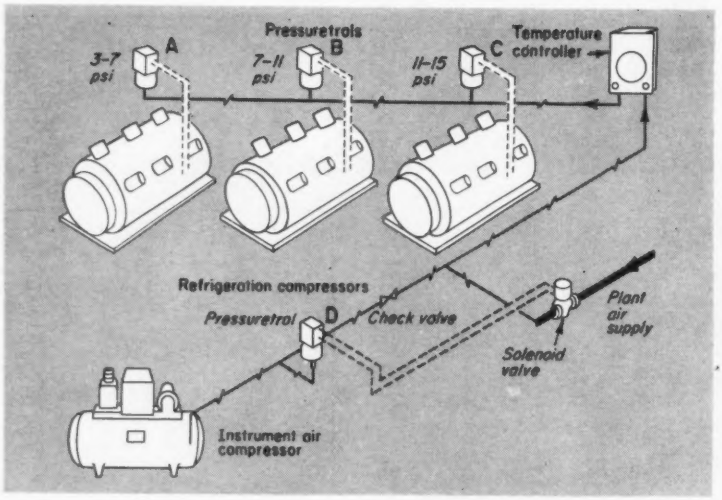
Send your idea today, before you forget. Address it to Practical Ideas Editor, FOOD ENGINEERING, 330 W. 42nd St., New York 36, N. Y.—The Editors.



Automated Refrigeration Cuts Temp Variations

An unusual control system, incorporated in the refrigeration setup at its Nutley, N. J. plant, enables Hoffmann-La Roche, Inc. to maintain temperature of a refrigerated room within a very narrow range.

Employed are three refrigeration compressors, which operate automatically, and in sequence, as needed to hold the desired temperature in the room.

To enable such operation, a temperature controller and three pressure valves were installed. Bulb of the controller (Brown recording thermometer with pneumatic control) was installed in the refrigerated room. And three electric controllers (Honeywell Pressuretrol) were placed in the outlet air line of this unit (see illustration). Each electric controller is connected with the motor of a compressor, and each completes the circuit at the proper signal.

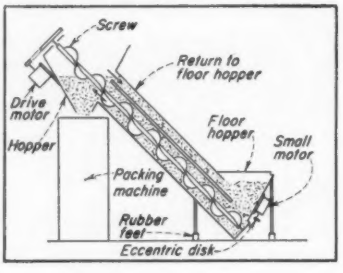
When temperature in room rises above set point of controller, air output of unit increases. When the increase is small (3-7 psi.) Pressuretrol unit (A in drawing) closes circuit for No. 1 compressor's motor causing it to start up.

If room temperature continues to rise, controller sends out a stronger signal. When it reaches 7-11 psi. pressure controller (B) starts 2nd compressor and, if pressure should rise to 11-15 psi., controller (C) starts the 3rd one.

Further Insurance

Air for the system is furnished by an instrument air compressor. To avoid possible failure from this source, a tie-in was made with the plant air supply.

When system is operating normally, plant air is shut off by a solenoid valve. If the compressor fails, however, controller (D) immediately opens the solenoid valve, thus permitting the refrigeration system to operate normally.—*Industrial Control News, Minneapolis-Honeywell Regulator Co.*



Controls Level in Hopper

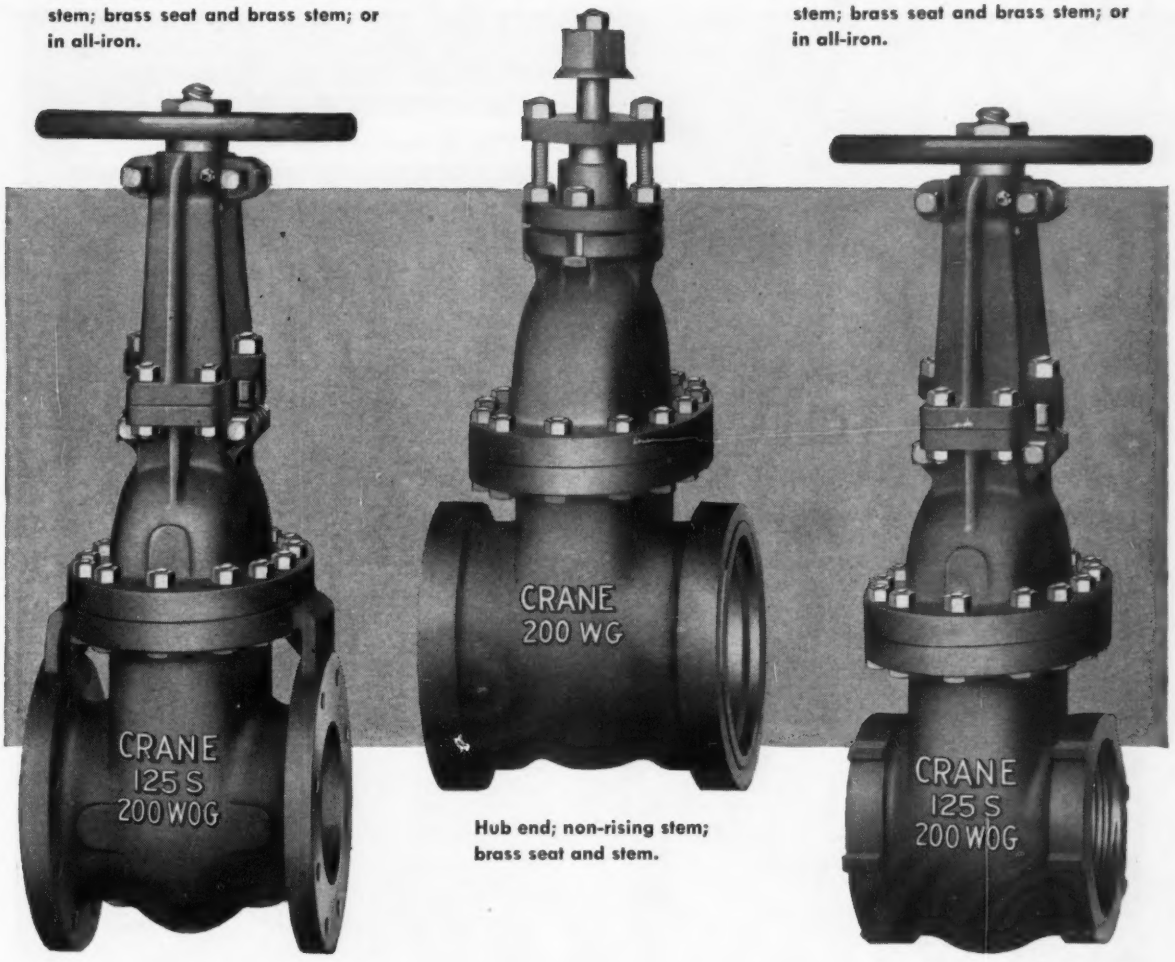
We are using a system for controlling product level in a supply hopper that I feel is an improvement over the one described on p. 38 of your Nov. issue.

We have a daily production which exceeds 40 tons and have a lot of storing, weighing and transportation problems. One of these is in the handling of cocoa powder in a humid atmosphere at high ambient temperatures.

Here, we applied an old principle—feeding the supply hopper of the packing machine with more cocoa

Flanged end; outside screw and yoke. Available with brass seat and steel stem; brass seat and brass stem; or in all-iron.

Screwed end; outside screw and yoke. Available with brass seat and steel stem; brass seat and brass stem; or in all-iron.



Hub end; non-rising stem; brass seat and stem.

Crane Iron Body Gates–Versatile Valves for Food Industry Services

Look to Crane for better performing 125-pound iron body wedge gate valves. Improved design gives them greater strength and important operational advantages. As a result, these valves offer dependable performance on a wide variety of services . . . easy maintenance . . . long life.

Among the advantages of Crane iron body wedge gates are:

- *Oval body and bonnet,* with extra metal where needed most.
- *No bonnet joint leakage*—More bonnet bolts on closer centers insure uniform bolt load distribution on bonnet joint and gasket.
- *Long disc guides* seat discs properly . . . minimize drag on seating surfaces . . . prolong valve life.
- *Shoulder-type seat rings* prevent rings from loosening in service.
- *Two-piece ball-type gland* prevents binding on stem even when gland bolt nuts are pulled up unevenly.
- *Exceptionally deep stuffing box* can easily be repacked under pressure when valves are wide open.
- *Available in 19 sizes*—2 inches to 48 inches—all-iron or brass trimmed. In addition, Crane makes companion valves in globe, angle, check, quick-opening and Underwriters' patterns.

For complete descriptions of Crane iron body gate valves, consult your Crane Representative, or write to Crane Co. at the address shown below.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

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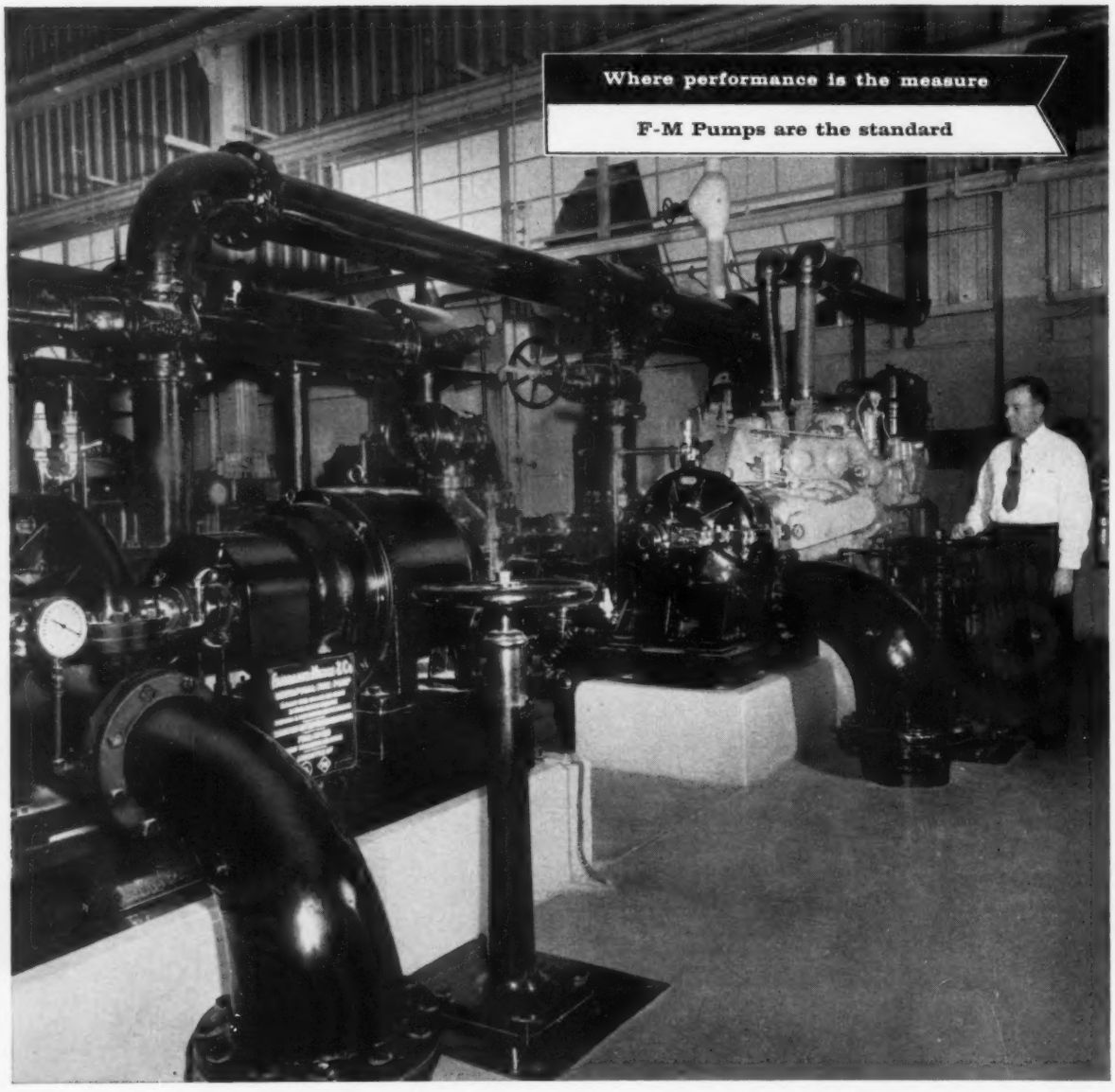

Mr. George Biggar, plant engineer of Ford Motor Company assembly plant at Mahwah, N. J., checks Fairbanks-Morse fire pumps (1500 gpm. motor-driven pump in foreground, 2500 gpm. diesel-driven pump near Mr. Biggar).

Ford guards against fire at giant new plant

To protect one of the world's largest auto assembly plants against fire, Ford Motor Company depends on these two Fairbanks-Morse fire pumps. As the heart of an extensive system, the two F-M pumps provide defense in depth, one pump backstopping the other.

This installation is typical of the great care and planning by modern industry to prevent the catastrophe of fire. Call in your F-M Sales Engineer for expert assistance in pump specification. As builder of the world's greatest variety of hydraulic combinations, Fairbanks-Morse will provide the exact type, exact size pump you need for maximum dependability.

For information write Fairbanks, Morse & Co., Dept. FE-3, 600 S. Michigan Ave., Chicago 5, Ill.

Ask for F-M Fire Pump Bulletins 5814F (horizontal) and 6920F (vertical).

FAIRBANKS-MORSE

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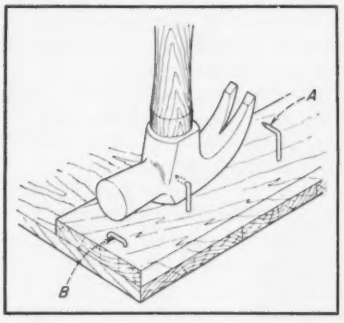
than the filler would handle. The excess is allowed to return through a chute to the floor hopper (see drawing). In order to overcome tunnel forming in the floor hopper, which was originally taken care of by a noisy ac. vibrator, a motor of low RPM, and having an eccentric disk on its shaft, was attached to the hopper. Also, the hopper is supported on rubber pads. The device is working very satisfactorily.—*C. Askenasy, Buenos Aires.*



Nail Clinching Made Easy

A typical method of locking two pieces of wood together is to drive a long nail through both and clinch over the pointed end by means of two separate bends.

The standard claw hammer can be easily modified to clinch the nails neatly by drilling a small hole in the side of its head (see sketch).

In use, the hole is engaged with the projecting nail point and the hammer given a quick twist to produce the bend (A). Final locking is obtained by hammering the nail over so the bent point penetrates the wood as at (B).—*Clifford T. Bower, London.*

Insulating Stack on Side Cuts Erecting Cost

When a metal smoke stack is insulated before it is erected, a real saving can be effected. And the job can be done without great difficulty.

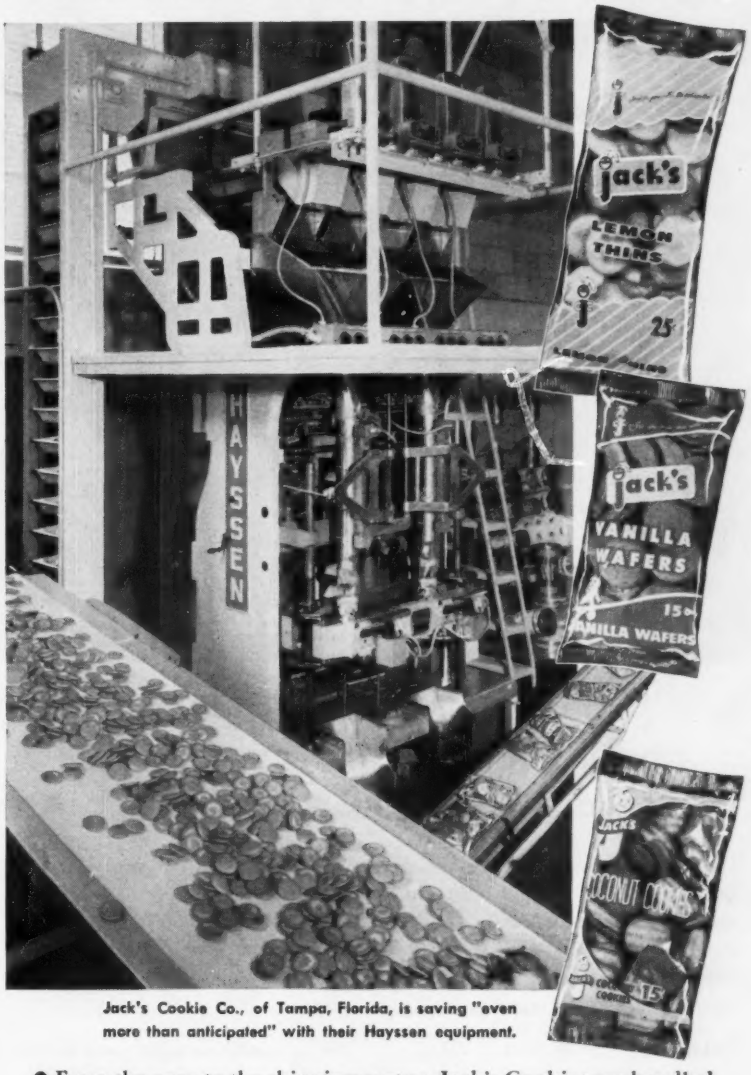
This was demonstrated by a Cincinnati company that wanted to avoid the cost of scaffolding for insulating its steel stack.

Stack was placed horizontally on wood blocks, then 2-in. thick blocks of 85% magnesia were secured to it with stainless steel bands on 1-ft. centers.

One inch wire mesh was fastened

AUTOMATIC PACKAGING

means lower costs and increased production!



Jack's Cookie Co., of Tampa, Florida, is saving "even more than anticipated" with their Hayssen equipment.

• From the oven to the shipping carton, Jack's Cookies are handled automatically by Hayssen. The oven conveyor feeds directly into the hopper of a Hayssen automatic "LIFT" elevator conveyor. Gently raised and discharged into the high level feed of the Hayssen "COMPAK," the cookies are weighed and bagged. The "COMPAK" forms the bag from roll film, with perfect electric eye registration of printed design, automatically fills and hermetically seals. Through Hayssen's quick, easy roll stock changing, Jack's is ready to package one variety after another in a matter of minutes.

See the COMPAK in operation at the PMMI Show, Booth 214, Atlantic City, March 25 through 28.

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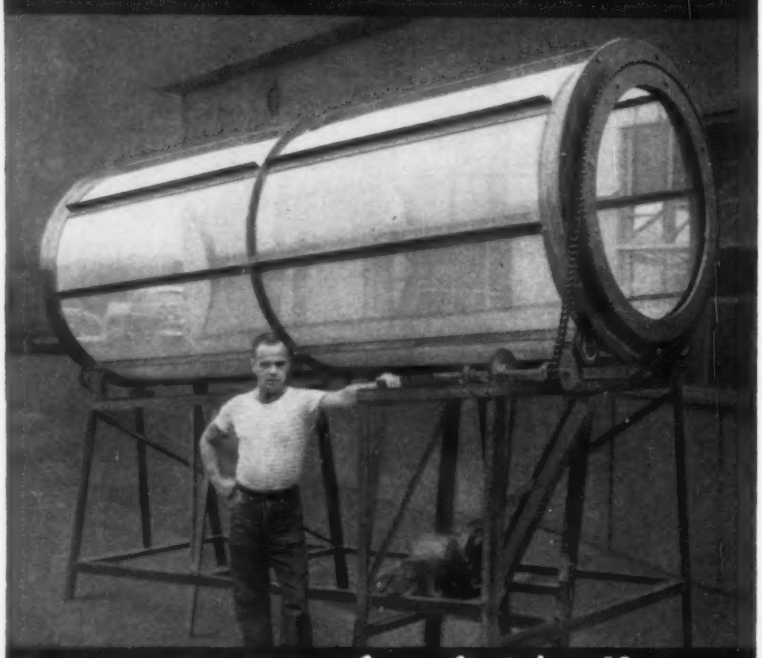
"WIRE CLOTH FABRICATIONS?"



"CALL Cambridge"

"You tell us what you need, and we'll have it for you fast—whatever the size or shape"

Roland's right, too. Here at Cambridge he's part of a team that has produced everything from thimble-sized strainers to king-sized dewatering screens, often well ahead of schedule. Whatever your requirements, you're assured of quality workmanship and prompt service when you call Cambridge. And, we'll work from your specifications or draw up prints for your approval.

TO MEET YOUR BULK WIRE CLOTH NEEDS, we have a wide variety of specifications from the finest to the coarsest mesh—in any metal or alloy—in the most frequently used specifications ready for immediate shipment. Individual loom operation and careful inspection just before shipment assures accurate mesh count and uniform mesh size.

Let us quote on your next order for wire cloth. Call your Cambridge Field Engineer listed in the telephone book under "Wire Cloth". Or write direct for FREE 94-PAGE CATALOG and stock list giving the full range of wire cloth available. Describes fabrication facilities and gives useful metallurgical data.

The Cambridge Wire Cloth Company

WIRE CLOTH | METAL-MESH CONVEYOR BELTS | WIRE CLOTH FABRICATIONS

DEPARTMENT Q, CAMBRIDGE 3, MARYLAND

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over the insulation and two coats of asphaltic weather-proof emulsion were applied. After curing, crane hoists were attached to previously applied lifting lugs on the stack and it was set up on its foundation.

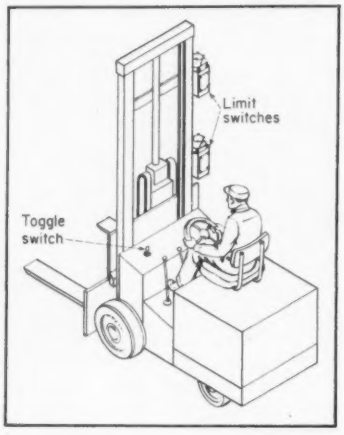
The insulation withstood the handling, and the cost-cutting technique proved entirely practical.—*M/S Insulation Reporter, Pub. by Mg-Si Insulation Mfg's Assn.*

Tire Matching Made Easy

Here's a simple method for determining sizes of tires so they can be properly matched on dual wheels of trucks to cut undue wear.

Draw a chalk mark on the garage floor and on the tire. Then roll tire one revolution and make another mark on the floor.

Mark the proposed mate similarly and roll it over the same course. Line on second tire should practically coincide with second floor mark.



Switches Speed Stacking

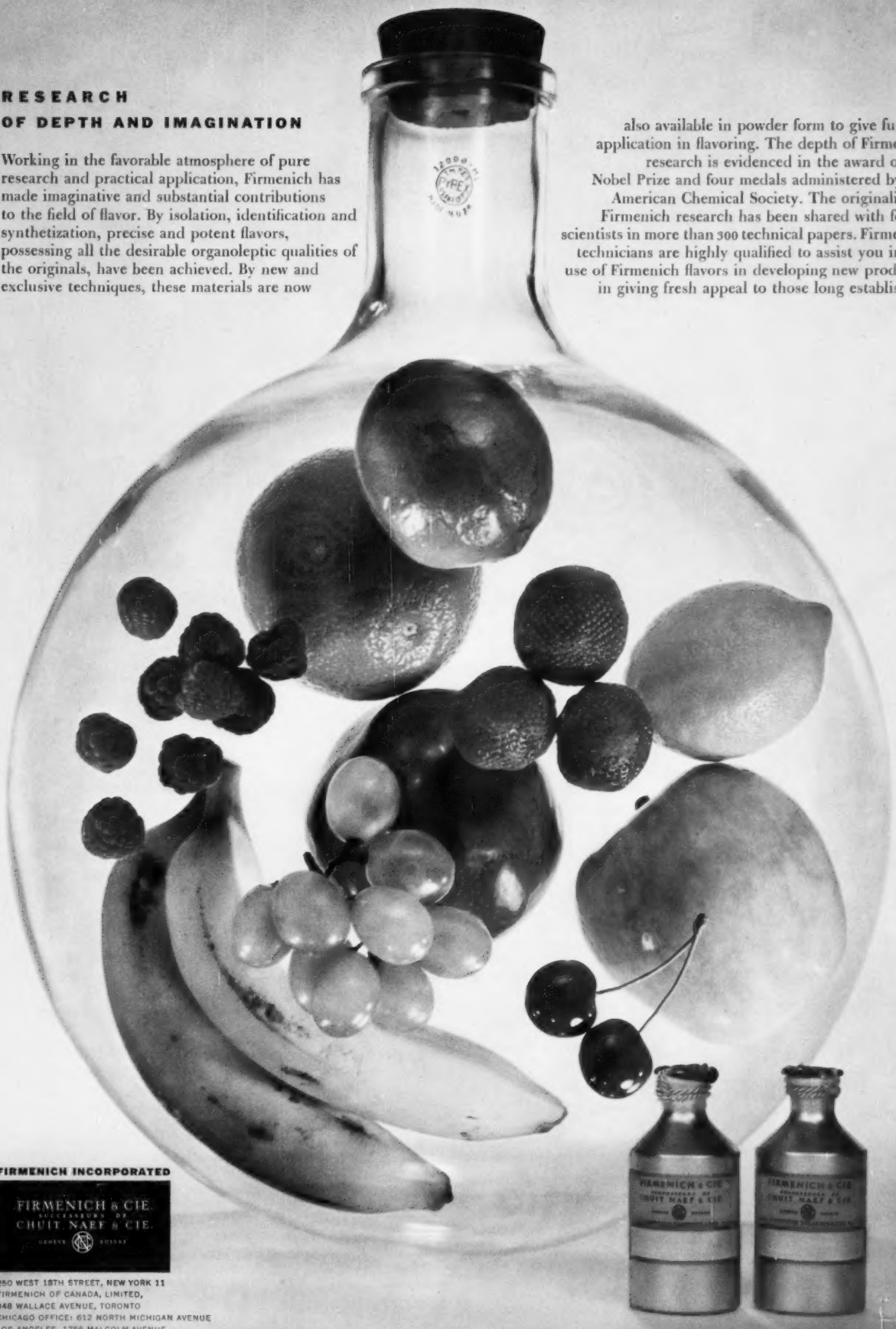
Two snap-action switches enable faster stacking by stopping the forks of the lift truck at predetermined heights.

Switches were installed on the lift frame of the truck, one at each of two shelf heights (see drawing). These are connected with a 3-position (on-off-on) toggle switch mounted on dash board of truck. This enables the operator to insert either limit switch in the circuit.

When fork contacts the preselected switch it stops, thus eliminating need for inching fork to correct height of shelf.—*Micro tips, pub. by Micro Switch, Freeport, Ill.*

RESEARCH
OF DEPTH AND IMAGINATION

Working in the favorable atmosphere of pure research and practical application, Firmenich has made imaginative and substantial contributions to the field of flavor. By isolation, identification and synthetization, precise and potent flavors, possessing all the desirable organoleptic qualities of the originals, have been achieved. By new and exclusive techniques, these materials are now also available in powder form to give further application in flavoring. The depth of Firmenich research is evidenced in the award of the Nobel Prize and four medals administered by the American Chemical Society. The originality of Firmenich research has been shared with fellow scientists in more than 300 technical papers. Firmenich technicians are highly qualified to assist you in the use of Firmenich flavors in developing new products, in giving fresh appeal to those long established.



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BEN BUTLER (right), West Coast Production Manager, Borden Company Chemical Division. Left, Bernard Egan, Alaskan Copper & Brass Co., Cooper Alloy distributor for the Pacific Northwest.

BUTLER OF BORDEN CHEMICAL

tells why he buys COOPER ALLOY stainless steel valves

Q. Mr. Butler, why does Borden Company Chemical Division require stainless steel valves?

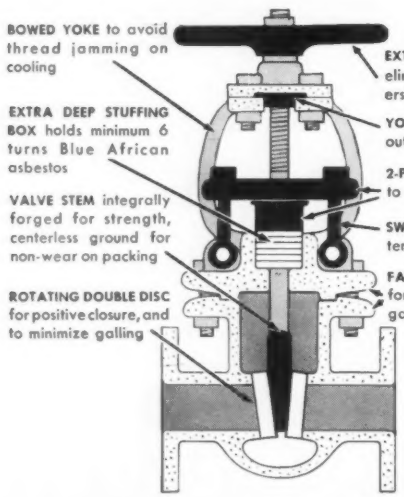
A. In the manufacture of formaldehyde, its derivative resins, and corresponding industrial adhesives only stainless steel can meet our rigid requirements for corrosion, contamination and heat resistance.

Q. What do you consider the most important factor in purchasing valves?

A. The truest measure of a valve is its operating performance. We have never received a complaint on Cooper Alloy valves from our engineers or operating personnel. The extra-large handwheel and unique valve design afford easy operation with positive opening and closing, minimizing maintenance and down time.

Q. What other factors count in choice of valve supplier?

A. Service. The large and complete Cooper Alloy stock at Alaskan Copper affords immediate delivery on stainless steel valves and fittings, as well as pipe. That's a big reason why we buy Cooper Alloy!


BOWED YOKE to avoid thread jamming on cooling
EXTRA DEEP STUFFING BOX holds minimum 6 turns Blue African asbestos
VALVE STEM integrally forged for strength, centerless ground for non-wear on packing
ROTATING DOUBLE DISC for positive closure, and to minimize galling
EXTRA LARGE HANDWHEEL to eliminate need for "persuaders"
YOKE NUT REPLACEABLE without valve disassembly
2-PC. GLAND CONSTRUCTION to prevent scoring of stem
SWINGING EYEBOLTS for maintenance convenience
FAIRED BODY-BONNET FLANGES for equal stress and uniform gasket loading

A VALVE DESIGNED FOR STAINLESS!

The Cooper Alloy valve is not an adaptation of earlier brass and iron patterns. Cooper Alloy, with over 35 years of experience in handling stainless steel, created a valve *designed to be cast in stainless!* **Check the Special Design Features shown at left.**

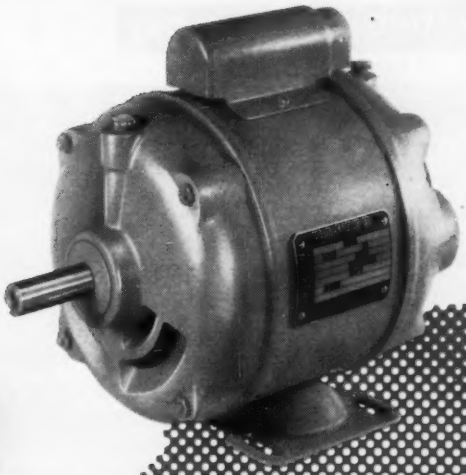
As the little CA man below is saying: *"You can tell a Cooper Alloy Valve as far as you can see it!"* Write today for *your* copy of our folder "Design Factors In Stainless Steel Valves." The Cooper Alloy distributor near you will be glad to show you the complete line of Cooper Alloy valves *and fittings*, and their advantages. He can serve you promptly from local stocks.

COOPER ALLOY

Corporation • Hillside, New Jersey

VALVE & FITTING DIVISION

THIRTY-FIVE YEARS OF STAINLESS STEEL PIONEERING



FOR 1/8 THRU 400 H. P. MOTORS

...see Master

All Enclosures—Most Types—Integrated Drives.

You get a great big plus value with Master motors—fractional and integral H.P. And that is that every one of them is engineered to meet your drive requirements *exactly*—to combine, if desired, in one tidy, efficient package with other Master components.

So for any drive requirement—simple or complex—a glance at the data below will show you that Master is your best bet. Let us tell you more.

Motor Ratings .....⅛ to 400 H.P. All phases, voltages, and frequencies.

Motor Types .....Squirrel cage, slip ring, synchronous, repulsion-start induction, capacitor, direct current.

Construction .....Open, enclosed, fan-cooled, explosion-proof, special purpose.

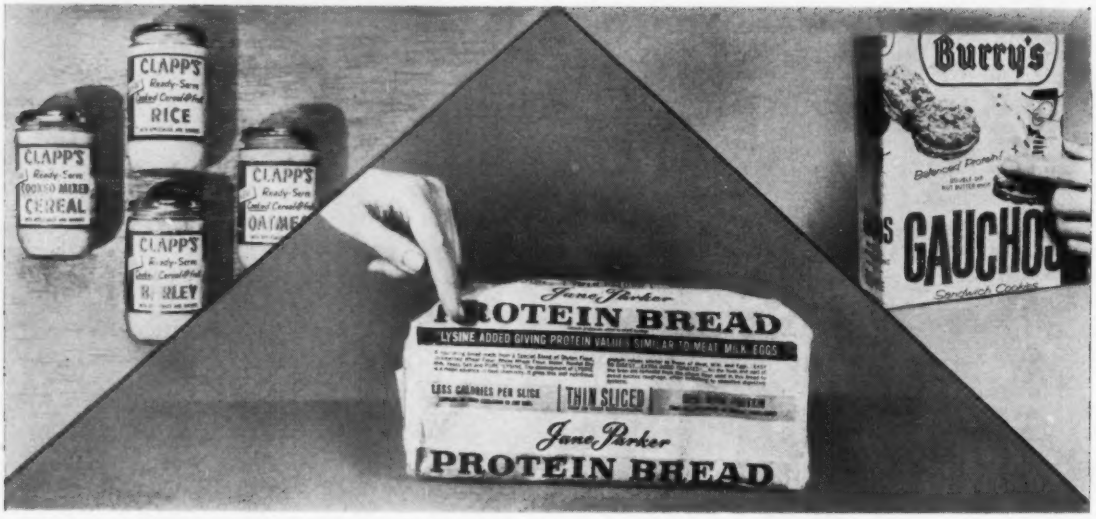
Speeds .....Single-speed, multi-speed, and variable speed.

Installation .....Horizontal or vertical, with or without flanges and other features.

Power Drive Features .....Electric brakes (2 types)—5 types of gear reduction up to 432 to 1 ratio. Mechanical and electronic variable speed units—fluid drives—every type of mounting.

THE MASTER ELECTRIC COMPANY • Dayton 1, Ohio

DIVISION OF RELIANCE ELECTRIC AND ENGINEERING CO.



FOR PROTEIN BALANCE, lysine is added to each of these products. (Photos courtesy Du Pont.)

How Lysine Ups Protein Value

Essential amino acid 'balances' the protein of wheat bread and cookies.

FORTIFIED with lysine—specifically L-lysine—the foods pictured above are forerunners in a highly significant nutritional trend.

Processors are boosting the protein quality of many cereal products by direct addition of this essential amino acid. Wheat-base foods, in particular, are now being converted to sources of high-quality proteins—comparable to those of milk, eggs, and meat.

Furthermore, these fortified foods offer new opportunities for creative merchandising and greater sales.

Cost of supplementing with this lysine ranges ½ to 2¢ per pound of product, depending upon the particular item and its amino-acid deficiencies. Lysine is supplied in the water-soluble monohydrochloride form, which has no effect on product flavor, texture, or processing procedure. For best results in cereal foods, use of about 0.25% monohydrochloride is recommended.

At present, lysine is sold at $12 a pound, but increased demand could cut the price.

The amino acid is being added to specialty wheat breads, cookies, various infants' ready-serve cooked breakfast cereals, and protein-hydrolysate broth mixes.

Although lysine can also upgrade the protein of white bread, flour, and macaroni products, composition of these items is governed by FDA Standards. Hence, it may not be added to any standardized food unless the standard is amended, or an experimental permit is obtained.

Case for This Fortification

Actually, most cereal proteins are deficient in several essential amino acids, but low lysine content is the factor that most limits the body's utilization of such protein for tissue building and repair. The problem is serious, since cereal foods account for at least 20% of our average daily protein intake. And in low-income groups, the figure probably exceeds 40%.

Unlike plants and some bacteria, the human body cannot synthesize all eight amino acids it requires to support life. Such nutrients must be obtained preformed from the diet and, therefore, are called 'essential amino acids.'

Some of these, such as lysine, must come entirely from outside sources. Others can be partially replaced by certain non-essential amino acids, as is the case in the partial replacement of methionine by cystine. This substitution does not compensate completely for what is lost in normal dynamic processes.

Moreover, the diet must supply all the essential amino acids in correct amounts simultaneously—otherwise there won't be complete utilization by the body.

Deficiency of a single amino acid, as measured by negative nitrogen balance, can develop in humans in as little as one day after intake is cut off. This is the most rapid deficiency symptom yet reported for any nutrient, and it re-emphasizes the need for proper amino-acid balance in the diet, as well as adequate intake of vitamins and minerals.[1]

Most animal proteins are termed 'high quality' because their balance of essential amino acids is just about right for efficient utilization. Since most cereal-vegetable proteins are deficient in one or more of these nutrients, they are of 'low quality'.

C. FELDBERG and C. P. HETZEL

Technical Service Department, Chas. Pfizer & Co., Brooklyn, N. Y.

GAUCHOS
Here's why—GAUCHOS are so good —and good for YOU!
LE-DIP
HIGH IN PROTEIN—The special balance of ingredients have been carefully chosen to make GAUCHOS more than twice as high in protein content as ordinary cookies.
BALANCED PROTEIN—Darvyl* has been added to give the wheat protein in GAUCHOS high quality protein value and a nutritional balance similar to that of the protein in whole fresh eggs. "Darvyl" is a readily assimilable form of L-Lysine, one of the essential nutritive amino acids.
RICH IN EGGS—GAUCHOS contain a very high proportion of eggs—also rich in protein.
LOW IN STARCH—The blend of ingredients in GAUCHOS has been especially worked out to provide the highest possible protein content. Starch has been kept to a very minimum.

WRAPPER lists extra nutritive values of fortified cookies.

No 'Empty' Calories Here

Burry Biscuit Co. does two things to make its premium Gaucho cookie a far better source of high-quality protein.

First, special formulation provides more than twice the conventional protein content. But for complete utilization by the body, this protein must be balanced, so—

Second, Burry adds L-lysine monohydrochloride* (an essential amino acid) to compensate for the lysine deficiency in wheat protein.

It's explained to the consumer by (1) store posters and (2) a panel on the package wrapper (reproduced in part at left). This lysine supplement costs about 1c./lb. of product, but it's justified by value added, says Burry.—*The Editors.*

* Available from Chas. Pfizer & Co., Brooklyn, and E. I. du Pont de Nemours & Co., Wilmington, Del.

Of Cereal Foods

Also upgrades rice, rye flour, breakfast cereals

Cereal proteins are also heat-sensitive. Lysine values for ready-to-eat breakfast foods (whole wheat, corn, oat, and rice) range 30 to 50% less than those reported for the whole grains.[2,3] This decrease may be caused, in part, by heat treatment during processing.

Lysine Applications Cited

It is noted that the protein contained in three slices of ordinary white bread is equivalent in quantity to that of one egg. However, the quality of bread protein is only about a third as good as egg protein. Thus, nine slices of white bread are required to equal the protein value of an egg in terms of quality and quantity.

If white bread is supplemented with lysine, only five slices are required to provide the protein value of one egg.[4]

In addition to supplementing wheat-base foods, lysine in combination with other essential amino acids can markedly improve the protein of rice, rye, and many breakfast cereals.

Quality of natural rice protein may be greatly improved by addition of 0.2% L-lysine and 0.12% L-threonine. In rat-feeding experiments with polished rice, these amino-acid levels produced three times the growth response of the unfortified diet.[5]

Protein efficiency of rye flour is also increased by supplements of 0.25% L-lysine and 0.2% L-threonine.[6] More recent studies[7] show that lysine alone can improve the protein of rye bread, upping the quality 21% when 0.166% of the amino acid is added. In comparison, supplements of up to 5% nonfat milk solids produced only a 9% gain.

Breakfast cereals are also deficient in essential amino acids, particularly lysine. Although this defect is less serious when cereals are consumed with milk, the resulting mixture is inferior in lysine content to milk protein alone.

Cereals fortified with lysine would be of value in geriatric nutrition, especially for persons allergic to milk or requiring soft foods because of defective teeth.

How It's Made

First commercial production of lysine by controlled fermentation was announced in late '56. The process,[8] a unique two-step technique, employs two different microorganisms.

In the first step, a mutant of *E. coli* acts on a substrate of glycerol, corn-steep-liquor solids, and water to yield diaminopimelic acid. Next, a special strain of *A. aerogenes* is mixed in to produce the enzyme diaminopimelic acid decarboxylase. Toluene is used to plasmolyze the bacterial cells and release the enzyme, which then converts the diaminopimelic acid to the amino acid, L-lysine.

The yield is steriochemically homogenous, and L-lysine is formed completely free of the biologically inactive D-isomer. After recovery and purification, the product comprises at least 98% L-lysine.

References

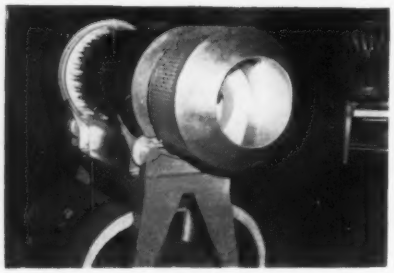
1. Cannon, P. R., Frazier, L. E., and Hughes, R. H., *Symposium on Protein Metabolism*, U. of Toronto, Canada, Oct. 30, 1953.
2. Wooster, H. A., Jr., *Nutritional Data*, H. J. Heinz Co., Pittsburgh, 1956.
3. Wertz, A. W. *et al*, *J. Am. Dietet. Assn.*, 32, p. 926, 1956.
4. Stare, F. J., *Northwestern Miller*, 257, p. 18, 1957.
5. Pecora, L. J., and Hundley, J. M., *J. Nutrition*, 44, p. 101, 1951.
6. Sure, B., *J. Agr. Food Chem.*, 2, p. 1,108, 1954.
7. Stromnaes, A. S., and Kennedy, B. M., *Cereal Chem.*, 34, p. 196, 1957.
8. Casida, L. E., Jr., U.S. Pat. 2,771,396, Nov. 20, 1956.

17 New Units for Cost-Conscious

Latest process equipment, fillers, instruments, handlers, cleaners seen at Canners Show

CASING LINE (25/min.) forms carton (far left), positions it at can packer, sends filled case to gluer-compression section (right).—*Crompton & Knowles Packaging Corp., Holyoke, Mass.* (112A)

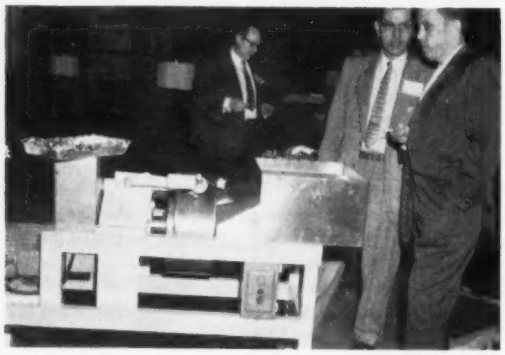
4 Processing Units



GREEN-BEAN GRADER (bar type) speeds sizing of whole or cut beans according to diameter.—*Food Machinery & Chemical Corp., San Jose, Calif.* (112B)

AUTOMATIC TOMATO TRIMMER cuts labor costs, ups yield. Operators place fruit on belt, stems or damaged portions downward. Lug-mounted unit employs adjustable, circular stainless blade.—*F. H. Langsenkamp Co., Indianapolis* (112C)

NEW SHAKER permits uniform feed to picking table, also serves as partial grader, chip eliminator.—*A. K. Robins & Co., Baltimore.* (112D)



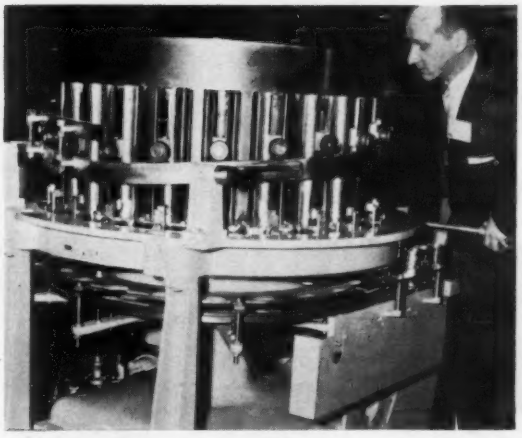
CENTRIFUGAL SLICER handles variety of fruits and vegetables up to 5½-in. dia. It uses corrugated knife for making ripple slices up to 1½ in. thick, straight blade for flat slices.—*Urschel Laboratories, Inc., Valparaiso, Ind.* (112E)

Processors

3 Fillers

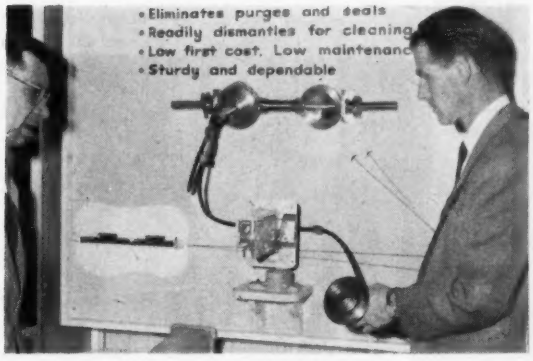
FROZEN-FOOD CARTONER, with straight-line feed, fills 240 cpm. on retail pack (110 cpm. institutional). Has 'no carton, no fill' device.—*Food Machinery & Chemical Corp., San Jose, Calif.* (113A)

PRESS-PACK UNIT speeds semi-automatic filling of No. 10's with whole or cut beans, green or wax. Telescopic pockets and air-operated plunger eliminate manual pressing of product.—*Food Machinery & Chemical Corp., San Jose, Calif.* (113B)

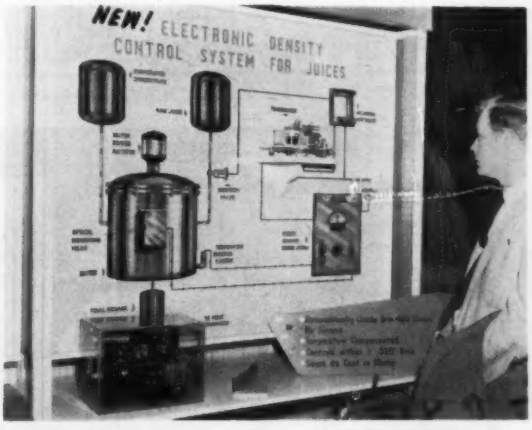


21 STATION UNIT handles viscous items at speeds up to 500 containers/min.; accuracy, $\frac{1}{16}$ fl. oz. Rotary-piston filler is easily cleaned, and has new plastic infeed screw for smooth container handling.—*Pfaudler Co., Rochester, N. Y.* (113C)

2 In-Stream Controllers

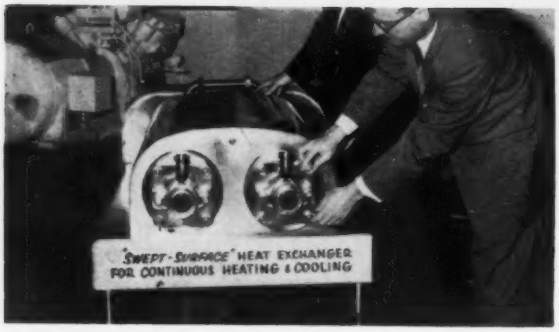


SANITARY FLOW METER uses special differential-pressure orifice unit to gage liquids with suspended solids, also viscous fluids. Transmits 3-15 psi. pneumatic signal to recorders and/or controllers.—*Taylor Instrument Cos., Rochester, N. Y.* (113D)

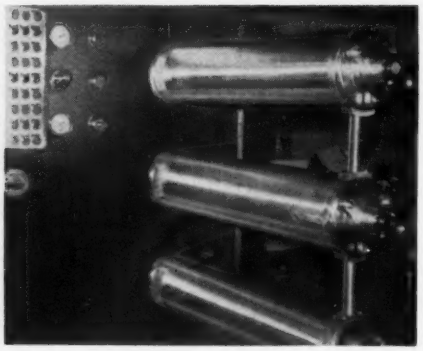


DENSITY-CONTROL SYSTEM, for concentrating juices, checks Brix 480 times per sec., actuates pneumatic valves to regulate blending. Electronic unit, accurate to 0.025 Brix, compensates for temperature.—*Taylor Instrument Cos., Rochester, N. Y.* (113E)

2 Heat Exchangers

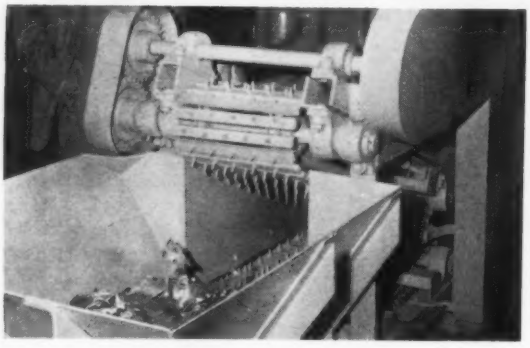


SWEPT-SURFACE EXCHANGER, for heating and cooling of semi-solids, employs displacer-type mutator for efficient heat transfer. Unit also enables emulsification and crystallization. Available with 1-4 cylinders mounted on single frame.—*Creamery Package Mfg. Co., Chicago.* (114A)



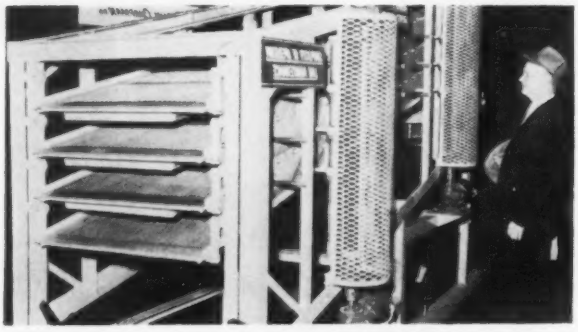
ROTARY-UNIT (1-3 cylinders) permits continuous heating (to 350F.) and cooling (to —50F.) of viscous products. Special 3-bladed mutator scrapes tubes to boost heat-transfer rate. Cylinders have separate piping, controls. You can heat in one, while cooling in another.—*Cherry-Burrell Corp., Chicago.* (114B)

5 Miscellaneous Units

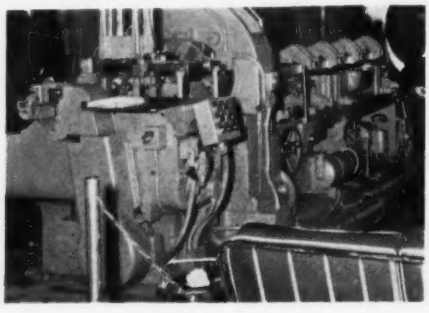


HEAVY-DUTY CRUSHER shreds cans up to 5 gal. size. Scrap is more easily handled and de-tinned, thus has higher value.—*F. H. Langsenkamp Co., Indianapolis.* (114C)

ELECTRIC FORK TRUCK (2,000-lb. capacity) features infinitely variable speed for better 'inching' control. Battery is removable from top and side, and control panel is quickly accessible.—*Clark Equipment Co., Battle Creek, Mich.* (114D)



COMPACT SHAKER GRADER, with 3-6 decks, handles variety of produce with 95% accuracy. Capacity on peas: 8,000-10,000 lb./hr. Unit is easily operated, cleaned.—*Berlin Chapman Co., Berlin, Wis.* (114E)



AUTOMATIC BODYMAKER (foreground) and side-seam solderer (background) turn out 502 cans per min. Sizes: 2 1/16-4 1/4 in. dia., 2 3/4-5 3/4 in. tall.—*Baldwin-Lima-Hamilton Corp., Hamilton, Ohio.* (114F)

MINIATURE SPRAY NOZZLE (foreground) delivers 40 gpm. of solution to clean compartmented tankers and holding tanks up to 12 ft. long. Hydraulically propelled unit has rotary head slotted for 3-dimensional spray—*Oakite Products, Inc., New York City.* (115A)

Other Equipment

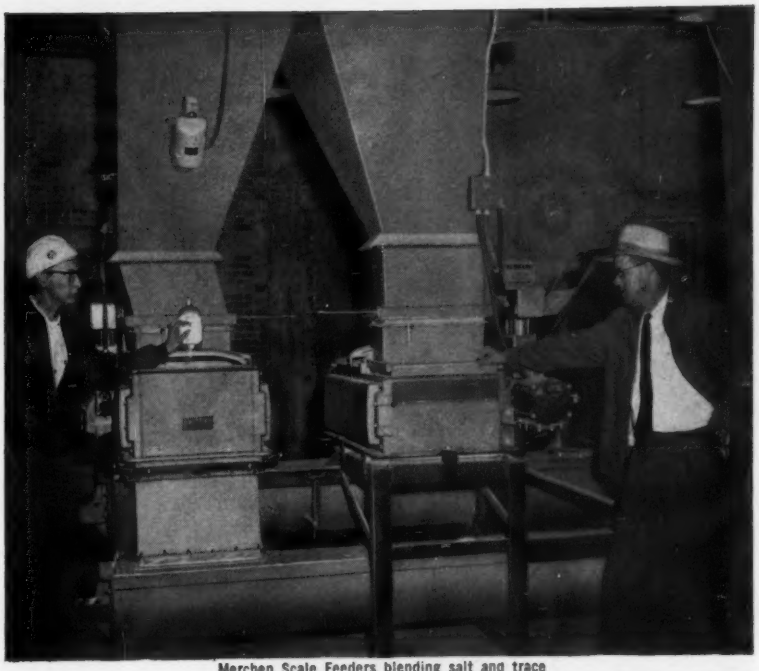
PILOT PROCESSING UNIT (45-gal. capacity) is equipped for heating and cooling under vacuum or pressure. Stainless kettle has 2-hp. variable-speed agitator drive, which accommodates four types of mixers. Cone bottom speeds draining of viscous products.—*Cherry-Burrell Corp., Chicago.* (115B)

BEAN SNIPPER has continuously oscillating knives that ride by any foreign objects protruding through pocket openings and return to normal snipping position. Hinged cylinder guard offers easier access to cylinder and knives. Unit is available with new picking table having rectangular sanitary tubular construction and pipe legs.—*Chisholm-Ryder Co., Niagara Falls, N. Y.* (115C)

UNIT LOAD for bright-canned products comprises 8 courses of fiber trays on which are assembled No. 10 or gal. cans. Fourth course has voids for forks of lift truck. Trays are stacked on jig and steel-strapped for shipment.—*Acme Steel Co., Chicago.* (115D)

COMPACT CAN BODYMAKER operates at 400-450 per min. Features air notching chip removal, double-action edger, overhead blank lock, stationary forming horn.—*E. W. Bliss Co., Canton, Ohio.* (115E)

Circle key numbers on Readers Service Card, back of book.



Merchen Scale Feeders blending salt and trace minerals at Carey Salt Co., Hutchinson, Kansas.

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The Carey Salt Company produces salt blocks for cattle that contain a percent blend by weight of nutritional minerals. W&T Merchen Scale Feeders were selected for the blending operation.

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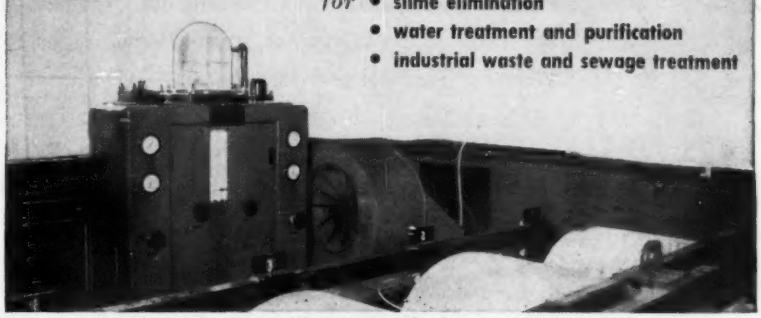

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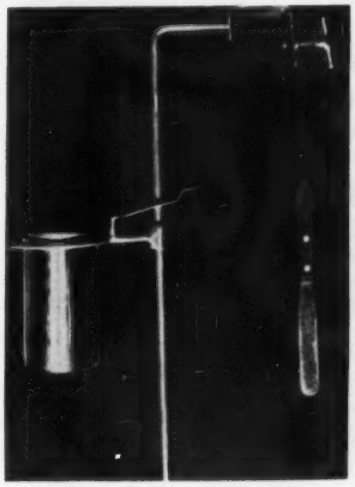
TABLE I — ACIDITY of Whey at A-C Endpoint Increases With Solids Content of Skim Milk Used

Total Solids Of Skim Milk (Percent)	Titratable Acidity Of Whey (Percent)
7.8	0.44
8.7	0.50
9.6	0.55
10.5	0.62
12.4	0.74
14.3	0.86

TABLE II — TITRATABLE ACIDITY of Whey Is Not an Accurate Indicator of Curd Cutting Point

Starting Product	Vat No.	Test For Cutting	Titratable Acidity (Percent)	pH of Curd	Cooking Time (Deg. F.)	Total Solids Of Curd (Percent)
Skim Milk (8.4% TS.)	1	A-C	0.43	4.73	126	18.2
	2	Whey acidity	0.51	4.49	145	18.3
Fortified With cond. Skim (9.4% TS.)	3	A-C	0.45	4.73	122	20.5
	4	Whey acidity	0.53	4.46	154*	

*Curd did not increase in firmness between 126 and 154F., and so was discarded.



A-C TEST APPARATUS comprises cup that's suspended in skim milk by holder that clamps over cheese-vat rim, and spatula to cut curd. (Courtesy J. J. Reid Co., Madison, Wis.)

Cottage Cheese—Without Guessing

Uniformity is made possible by two developments: A curd cutting test and a firmness indicator that take trial-and-error out of processing

SALES AND ADVERTISING experts agree that to expand sales and maintain volume, a product must have uniformly high quality.

This fact is especially pertinent to manufacturers of cottage cheese—for those striving to increase sales have often faced day-to-day variations in quality.

But big strides—in the form of two recent developments—have been taken toward alleviating this situation. They are seen converting the cottage cheese process from an art to a science.

Specifically, the developments are:

1. The A-C test—a simple, accurate technique for determining time for cutting the cheese curd.

2. The Lundstedt curd meter—a device for obtaining uniform curd firmness in all batches of cheese. (For details on its operation, see FE Nov. '55, p. 97.)

D. B. EMMONS and W. V. PRICE

Department of Dairy & Food Industries, University of Wisconsin, Madison

Acid-Coagulation Test

In the manufacture of cottage cheese, cutting the curd at the correct time greatly influences cooking temperatures, ease of handling curd in the vat, and properties of the finished product.

Titratable acidity of the whey and pH of the curd have been used to estimate the cutting time. But the A-C test, which measures the acid-coagulation point of the casein, provides a simpler and more direct method.*

The new test has several advantages which make it particularly useful for producing cottage cheese of uniform quality. This is especially true if certain irregularities of firming have occurred when other tests were used.

1. It is easy to run, requiring only careful following of a simple routine.
2. Equipment is simple, inexpensive, and easy to maintain.
3. The test compensates for natural or intentional variations in the total solids of skim milk used (Table I), and for daily and seasonal differences in supplies.
4. It works equally well on both short-time and overnight methods.
5. It is more accurate and reliable than either the titratable acidity of the whey on pH of the curd (Table II).

How It's Used

Here is the suggested cheese-making techniques, employing the A-C test:

1. Add starter to vat of skim milk.
2. After setting temperature has been adjusted, but before adding rennet, remove a beaker of skim milk from vat.
3. Cover beaker, and suspend it in vat so that level of skim milk

*For further details on the A-C test, see *Extension Circular 541*, available through the Agricultural Bulletin Room, U. of Wis., Madison.

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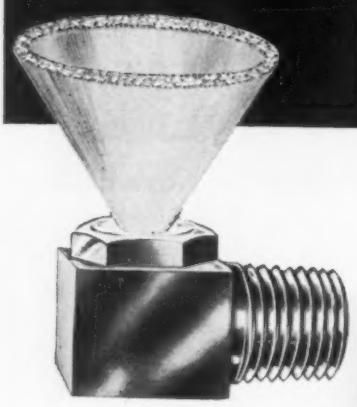

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in beaker is a little below that in vat.

4. When skim milk in vat has coagulated, check that in beaker for evidence of coagulation.

5. When a gel can be detected in beaker, cut this coagulum with one or two strokes of a small knife or spatula.

6. Repeat cutting at intervals of approximately 5 min. and look for appearance of fine lines of whey where curd has been cut.

7. When lines first appear (marking A-C endpoint), curd in vat is ready to be cut.

Two factors must be controlled carefully for the successful operations of the test; (1) Keep rennet or other milk-coagulating enzymes out of the test sample, and (2) make sure that the rate of acid development is the same in the test sample and in the vat.

Check Points

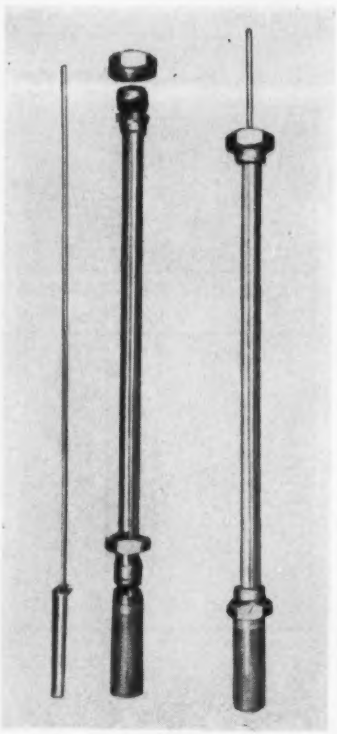
Factors that may cause differences in rates of acid development in the test cup and in the vat are: (1) Heating or cooling of the skim milk in the A-C test sample or in the vat (e.g. cooling of surface by evaporation); (2) traces of cleaning powders, chemical sterilizers, bacteriophage, or dirty equipment in either one; or (3) failure to take a well-mixed sample for the test.

It is recommended that rennet be added 1-1½ hr. after the starter to allow plenty of time for mixing starter and skim milk before taking test sample.

An alternative method comprises using the A-C test in the control laboratory instead of in the plant. About ½-1 hr. before setting the vat, add starter (same percent as used in vat) to a sample of the skim milk to be used for cottage cheese making. Incubate sample at normal setting temperature. At the A-C endpoint, centrifuge some of the curd in a Babcock cream test bottle and determine titratable acidity of supernatant whey. This is the acidity at which the vat of cheese should be cut.

The Lundstedt Curd Meter

Another problem concerning product uniformity is determination of the correct time for ending the cooking operation. Various means, such as squeezing the curd in the hand, dropping curds on the floor, breaking the particles and examining the centers for free whey, have been used.



LUNDSTEDT METER consists of perforated basket for holding curd, plunger that is dropped on it. Graduations on plunger rod indicate curd firmness. (Courtesy Cherry-Burrell Corp., Chicago)

Now a mechanical device is available to measure firmness in a more reliable and scientific manner. This is the Lundstedt Cheese Curd Meter (developed and patented by Erik Lundstedt of H. P. Hood & Sons, Boston).

The meter consist of a perforated metal basket for holding the curd, and a plunger which falls through a guiding tube onto a weighed amount of curd in the basket. The softer the curd, the farther the plunger forces its way into the basket. Graduations on the plunger show the extent of penetration and give the desired measure of curd firmness.

The meter was developed primarily for determining correct firmness for draining the whey during cottage cheese manufacture. It also serves to check firmness of finished cottage cheese as it is sold to the consumer, because the test can be applied to dry, salted curd and to creamed curd after the free cream is drained from it. —*End*

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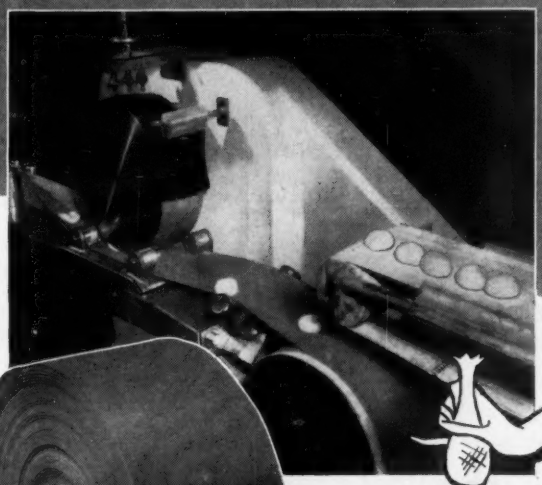

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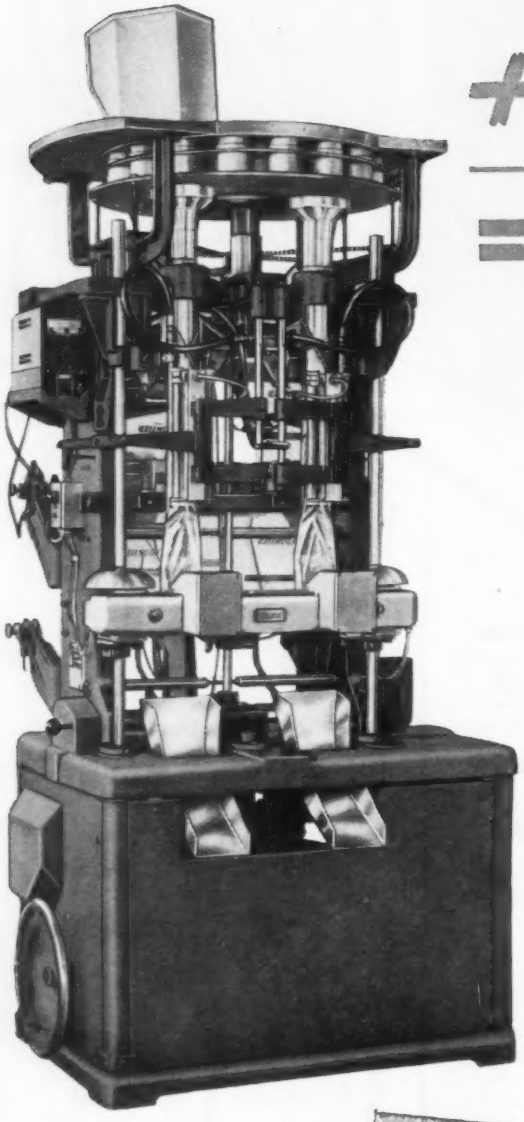

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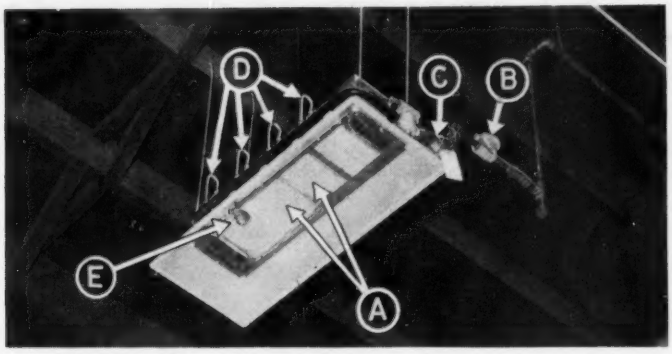

OVERHEAD gas infra-red heater keeps high-ceiling area warm and dry. It comprises: (A) Ceramic rayheads, (B) gas-pressure regulator, (C) thermostat relay, (D) gas lines to burners, and (E) igniter.

I-R Saves on Space Heating

Food plants eye radically new gas-fired infra-red unit. It's particularly suitable for large-floor and high-ceiling areas, also partially exposed loading docks

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Far simpler and more efficient than former I-R units, they operate at higher temperatures (about 1650F.) to convert much more of their Btu. input into usable high-intensity radiation.

True, conventional space heating, based on water, air, steam, or electricity, is efficient in small enclosed areas. But as floor space increases and roofs become higher, more Btu's are needed to heat greater amounts of air by relatively inefficient convection. And costs go up. Moreover, even such heating is frequently impossible at loading docks and other partly exposed areas.

In contrast, radiant heat warms surfaces and people directly as they absorb the rays. The body is warmed instantly while the air remains cool. Heated floors, walls, and machinery become additional radiators that maintain comfortable working conditions.

▶ **Very important, gas-fired I-R can cut heating costs 20% in any structure that's easily heated by conventional methods, and up to 50% in hard-to-heat buildings.**

Furthermore, I-R provides spot heat at loading docks and checks condensation in warehouses.

Generators may be installed at any height from 7 to 60 ft. without sacrificing efficiency, or they may be mounted on walls.

How Rays Are Produced

Generator fuel may be either natural gas, manufactured gas, or LPG. In operation, gas is metered through an orifice, next passes through an air-aspirating chamber and mixing tube, then enters a chamber beneath a ceramic mat, where the mixture is distributed uniformly.

Combustion takes place on the surface of this mat, which is perforated with 200 holes per sq. in. High surface temperature achieved is attributed to the large number of holes and to physical properties of the ceramic. Since the unit is a 100% primary-air burner, no pre-mix or blower is required.

Generators employ multiple banks of eight ceramic elements, called 'rayheads.' Latter are grouped in an aluminum reflector that directs the rays. For installation in high bays a number of rayheads are combined in the same fixture to radiate over a large area. —End

C. H. FOULDS

Vice-President, Perfection Industries, Division of Hupp Corp., Cleveland

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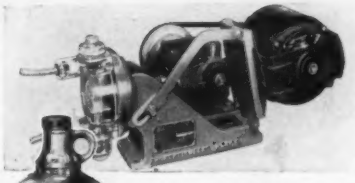

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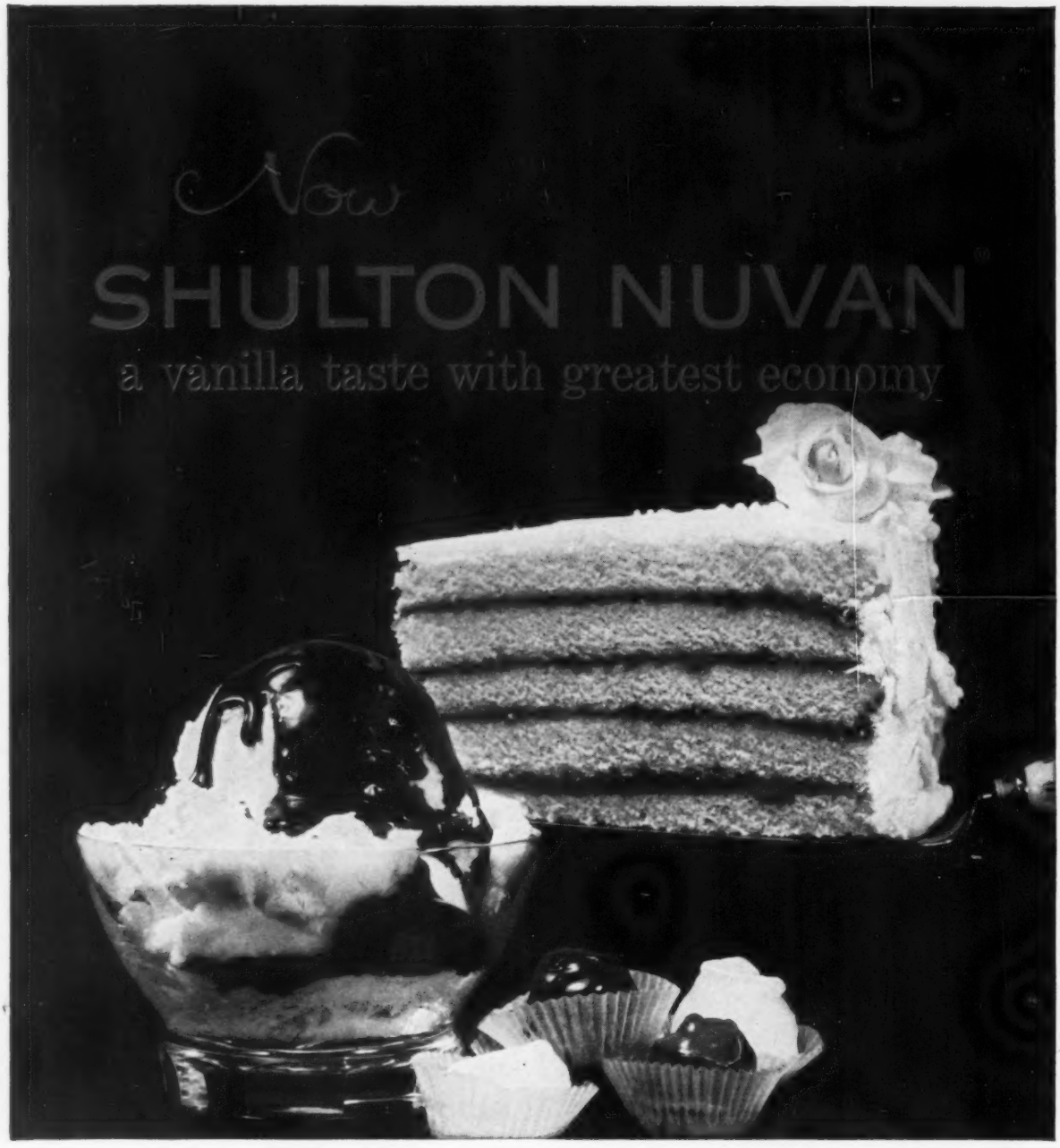

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For example: Approximately 97 lb. of grated American cheese was mechanically mixed with about 3 lb. of dried brewer's yeast. It was found that the mixture had enhanced cheese flavor compared with that of cheese alone, and that this flavor lasted longer than of cheese alone under the same storage conditions.—U.S. Patent 2,817,590, Dec. 24, 1927.

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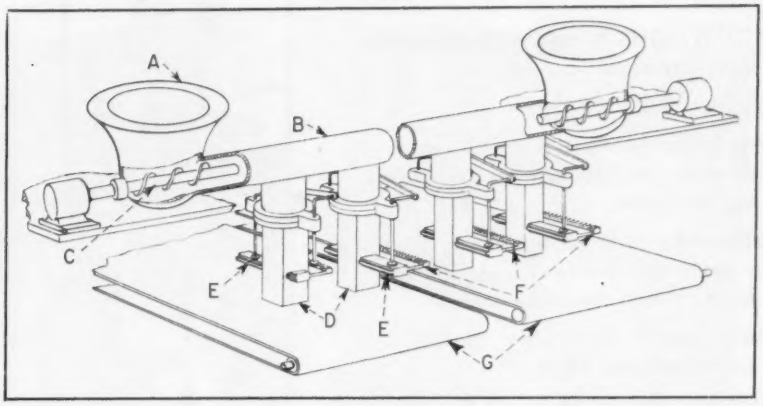
On entering the bottles, beer flows down the sides without splashing or exchange of heat energy. Air adsorption is minimized, both by reduced contact and by the lowered solubility at the higher temperature of filling.

On cooling headspace is filled almost entirely with CO_2, and reduced O_2 content of packages greatly improves physical stability and keeping quality. It also makes rapid cooling unnecessary.

Bottle breakage at the filler is low, between 0.2 and 0.3%. Exploding bottles between crowner and labeler do not occur, since they were closed at atmospheric pressure. Labels quickly set firmly and are not damaged by further handling of bottles, or packing them in cases.—*Brauwelt*, 97(99/100), 2021-25, Dec. 13-17, 1957.



Multiple Portion Forming Machine Speeds Production of Meat Patties

A unit that enables high speed production of individual portions of ground meat is the object of a recent patent.

The machine comprises hopper (A in drawing) connected with horizontal tubular duct (B) containing screw (C). Also, casings (D) extending downward from the duct, and containing reciprocating horizontal drawers (E), each with a pair of axially spaced openings. One opening connects directly with the casing while the other extends outside it.

Each drawer has a geared rack (F) with a pinion gear intermeshed with it. Above this gear, and engaging it is a 2nd gear on which is rotatably mounted a pivoted rocker arm carrying vertical ejectors. Downward stroke of each ejector is synchronized with movement of the mold drawer.

In operation of the former, ground meat is fed to the hopper, picked up by the screw and moved through the duct to the casing. Then it is forced down into the inside mold opening. A solenoid then causes the drawer to move bringing the filled mold outside of the casing and directly under the ejector which moves downward causing the patty to be discharged onto conveyor (G).

Meanwhile, open mold moves into casing and is filled with ground meat. Reciprocating motion of drawers produces a continuous flow of patties which are discharged alternately from each side of the casings.—U.S. Patent 2,820,247, Jan. 21, 1958.

Gassing Before Slaughter Speeds Chicken Bleeding

Recent tests on gassing of chickens with CO_2 before slaughter indicate this method can cause faster and more complete bleeding.

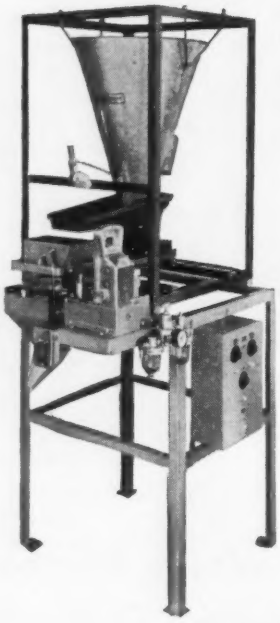
In controlled experiments with 95 meat-type chickens of both sexes, USDA researchers found that gassed birds lost much more blood in the initial 30-sec. period than those slaughtered without gassing.

After 3 min., amount of bleeding in proportion to body weight still was greater for gassed birds, but not significantly so. Sex seemed to have little or no direct bearing. However, heavy chickens lost a smaller percentage of body weight than lighter ones.

Birds were gassed in a specially constructed wooden box with a small electric fan that circulated the mixture to insure uniform CO_2 concentration. A concentration of 33-36% CO_2 was maintained. Each chicken was removed after 75 sec. exposure.

PROTECT YOUR PROFIT MARGIN

SAVE PRODUCTION COSTS ... ELIMINATE OVERWEIGHTS



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- Precision industrial type scale.
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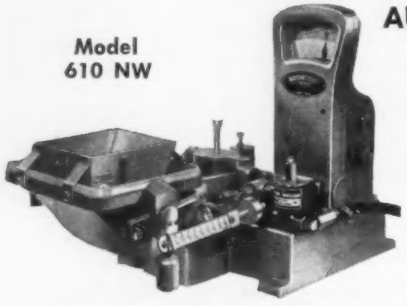
- Readily accessible service and maintenance facilities.
- Performance guaranteed in writing.

This EXACT WEIGHT Automatic Net Weighing Machine is especially adapted for weighing many types of products in the food industry. Its fast and accurate operation speeds production, cuts production costs. Providing a constant and visible check on every package weight, it eliminates overweights, protects your profit margin. Ruggedly built and backed by 40 years' experience in specialized weighing, EXACT WEIGHT Weighing Machines give you trouble-free service with maintenance costs at a minimum.

Model 620 NW has a rated capacity of 10 lbs.—Model 610 NW has a 3 lb. capacity. Write for Form #3311 for further specifications.

Model 610 NW



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The Net Weighter, left, can be supplied without the feeder machine, support frame and discharge chute. This unit may be adaptable to your specific operation. Write for complete details.

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With 33-36% CO_2 at 75 sec. birds were completely immobilized without detrimental effects. Time between removal of birds from gas chamber and slaughter was kept at 21 sec.—*Agr. Marketing* (USDA, Washington 25), Dec. 1957.

Antibiotics By Bombheads Not Effective for Whales

Introduction of an antibiotic into whale flesh by inserting it in the bombhead of the harpoon appears to be less promising than the injection method—100g. in 20-gal. sea water injected into visceral cavity as soon as practical after slaughter.

Both methods effect some reductions in bacterial populations. But the large number of misses by harpoons cuts effectiveness of this method.—*Progress Reports of Pacific Coast Stations*, No. 109, 14-15, Nov. 1957.

Enzymes in Fruit Pits May Corrode Lacquered Cans

Corrosion of lacquered cans by fruit packs containing beta-glucosidase in their pits may be excessive unless the pack is heat processed for at least 12 min.

Experiments made on cherries and Pershon plums in plain cans, and Victoria plums in lacquered cans, showed that a 12-min. cook at 212F. was insufficient to inactivate peroxidases in cherry stones. Beta-glucosidase activity persisted in the stones even after 30 weeks of storage.

In plums a 6-min. cook inactivates most of the peroxidase, but 12-min. was required for beta-glucosidase, following a 10-min. exhaust. Unless latter is inactivated, corrosion of the lacquered cans may be abnormally high even though the can contents are sterile microbiologically. Plain cans are not affected.—*J. Science of Food & Agr.* 8(12), 721-26, 1957.

"Rayed" Potatoes Unsuited To Chip Manufacture

Sprouting of potatoes during storage can be inhibited by irradiation with gamma-rays, electrons, or X-rays, and doses up to 20,000 rep have been applied for the purpose.

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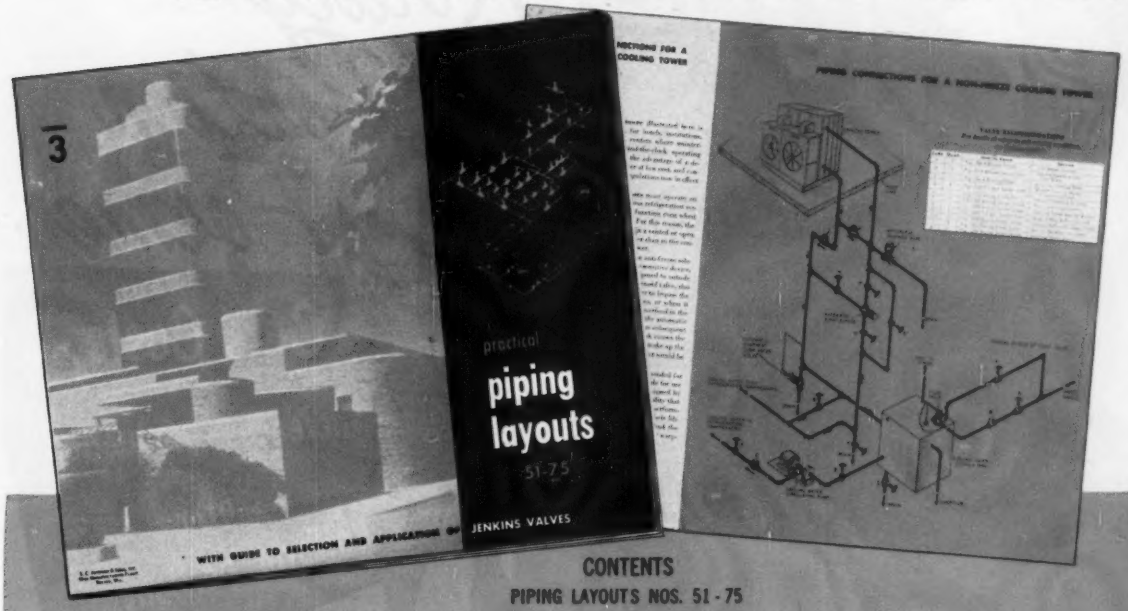
JENKINS PRACTICAL PIPING LAYOUTS *Books*



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PIPING LAYOUTS NOS. 51 - 75

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73	Piping for Acid Liquor Preparation in the Sulfate Pulping Process
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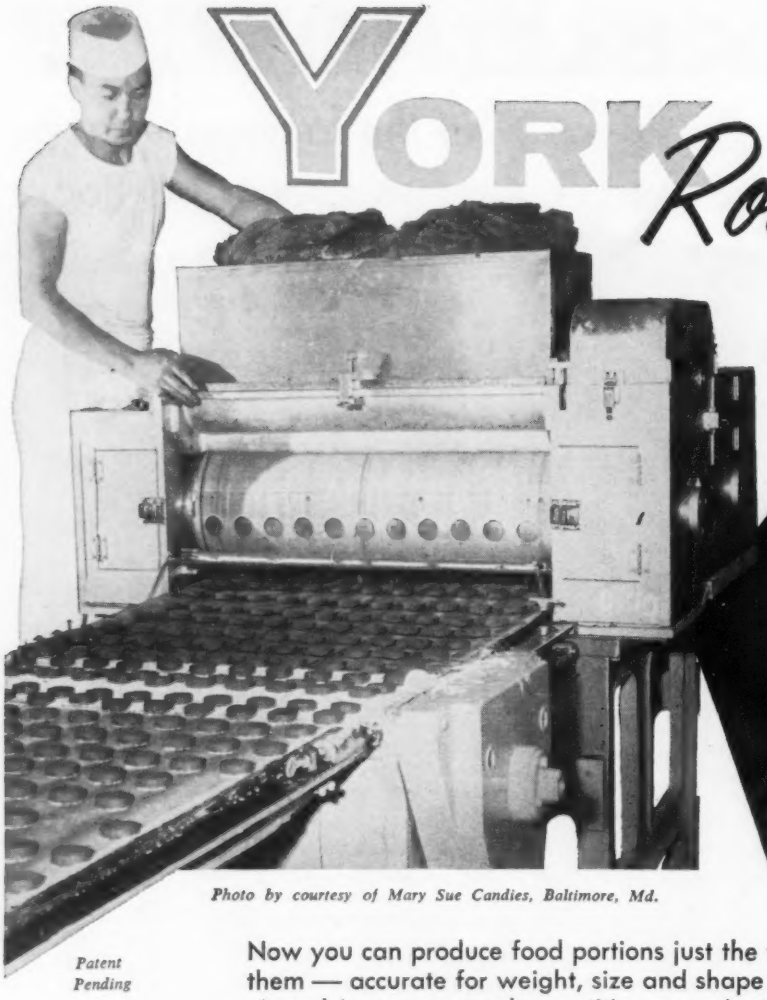

Photo by courtesy of Mary Sue Candies, Baltimore, Md.

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With British potatoes, excessive wilting and development of sweetness occurred during subsequent storage. When doses of 8,500 rep were used on 5 varieties, sprouting was suppressed.

But the commercial life of the potatoes was ended by wilting and increase in sweetness. Former would probably not be a serious problem except in dry climates, but increase in sugar content and breakdown on cooking made the irradiated potatoes unsuitable for such purposes as chip manufacture.

Potatoes of the Dr. McIntosh variety, irradiated with 8,500 rep, had 0.99% reducing sugars after 38.5 weeks, compared to 0.17% in untreated control. Sprout suppression was obtained whether irradiation was applied within a week of harvest, or after 8-24 weeks of storage at 40 F., and storage life was about the same. —*J. Science of Food & Agr.*, 8(12), 707-15. Dec. 1957.

Sorbic Acid Controls Yeast In Cucumber Fermentations

In cucumber brines, both surface and subsurface yeast growths are effectively inhibited by sorbic acid concentrations of 0.01-0.10%.

Occasional yeast activity has been found at 0.01 or 0.02%, and insignificant amounts at higher concentrations.

Lactic acid development is not affected below 0.03% sorbic acid. At 0.1% lactic acid fermentation is inhibited by initial brine strengths of 20-40 deg. salometer, and at 0.05% an initial brine of 40 deg. salometer inhibits the fermentation. Higher concentrations of sorbic acid may therefore be used when the salt levels are low.

When salted at 20-35 deg. salometer, 2.5 lb. of sorbic acid per 100 bushels of cucumbers (about 0.025%) should inhibit yeast growth without impairment of lactic acid development. — *Applied Microbiology* 5(6), 373-79, 1957.

Bacto-Strip Technique Shortcomings Cited

Dry strips of sterile heavy filter paper impregnated with specific culture medium, called Bacto-strips, offer a means of conducting certain bacteriological tests on milk or on

FASTEST ACCURACY KNOWN in Moisture Determinations!

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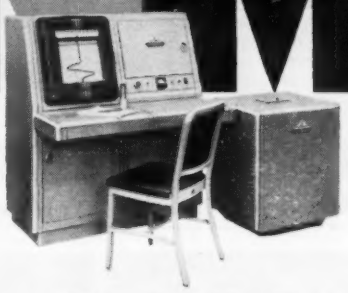

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3. Read off the moisture value recorded on the chart.

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Advances in Technology

surfaces of equipment on the farm, and in small processing plants lacking laboratory facilities.

However, they are subject to the following disadvantages: Counts are often not in close agreement with those obtained by standard procedures; optimum incubation times (8-10 hr.) do not fit in with customary working hours; many of the strips tested were already contaminated, and the cost (17c. each for Coli-strips, 47c. for contact surface strips) is high.—*J. Milk & Food Technology*, 345-47, Dec. 1957.

Effect of Temperature Rise On Bulk Milk Quality

Addition of warm morning milk to the previously cooled evening product in farm tanks produces no detectable rancidity on cooling, provided temperature of blend does not greatly exceed 60F.

And further additions associated with every-other-day pickup actually dilute the rancidity level and delay overall increase.

These are findings of investigations at Cornell U. in which aliquots of morning milk (cooled to give desired blend temperatures of 40, 50, 60, and 70F.) were added to evening milk at 40F. Lipase activity was determined after 0, 24 and 48-hr., and flavor tests were made after 72-hr.

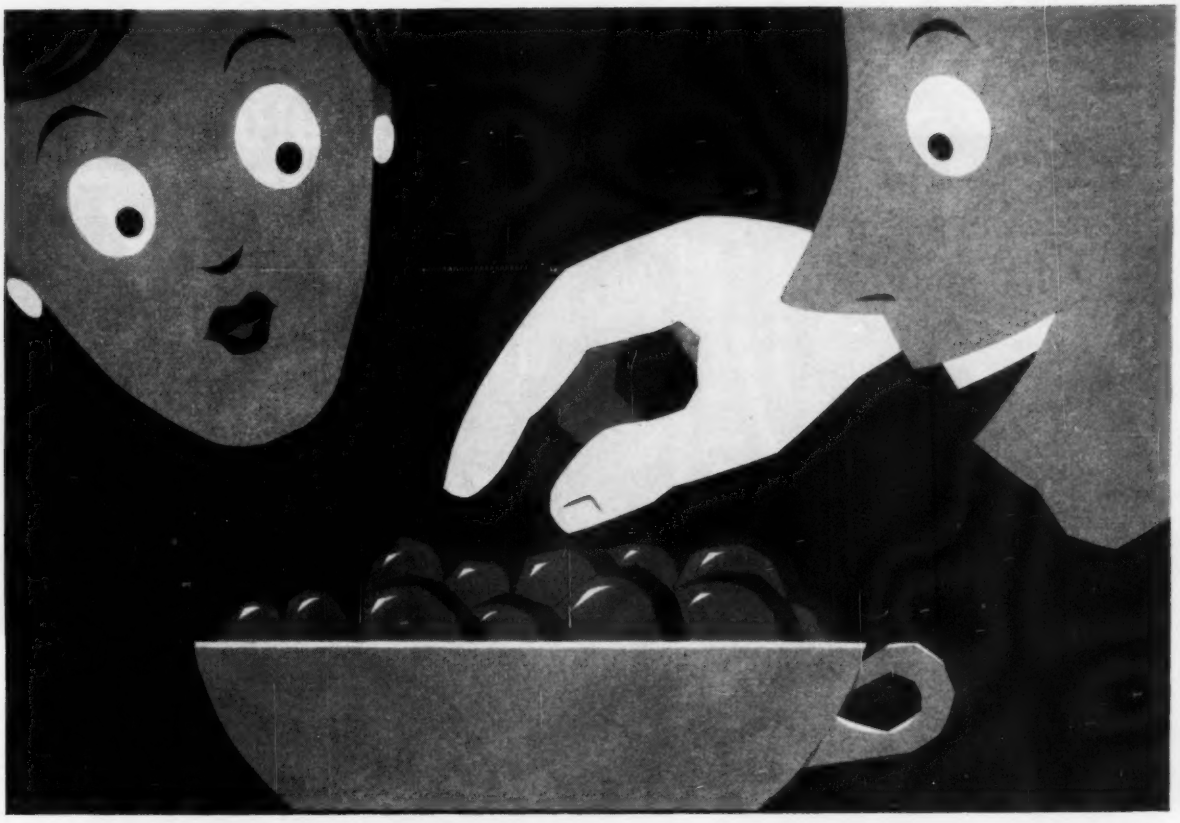
There was little rise in lipase (as acid deg. values) with blend temperatures as high as 60F. But at 70F. a rise of 0.2 acid deg. occurred, which was sufficient to be detected organoleptically.—*J. of Milk & Food Tech.*, 317-22, Nov. 1957.

Plastic Milk Bottle

Development of a plastic bottle suitable for packaging milk was recently reported from Switzerland.

The material is harder than previously used plastics, is almost glass-clear, and resists temperatures up to 265F. In addition, it does not change volume significantly with temperature changes, and retains its shape when subjected to normal pressures.

The new container is said to possess the following advantages over glass ones: (1) Is resistant to breakage (losses average 0.2%); (2) weighs 60-80% less; (3) has lower



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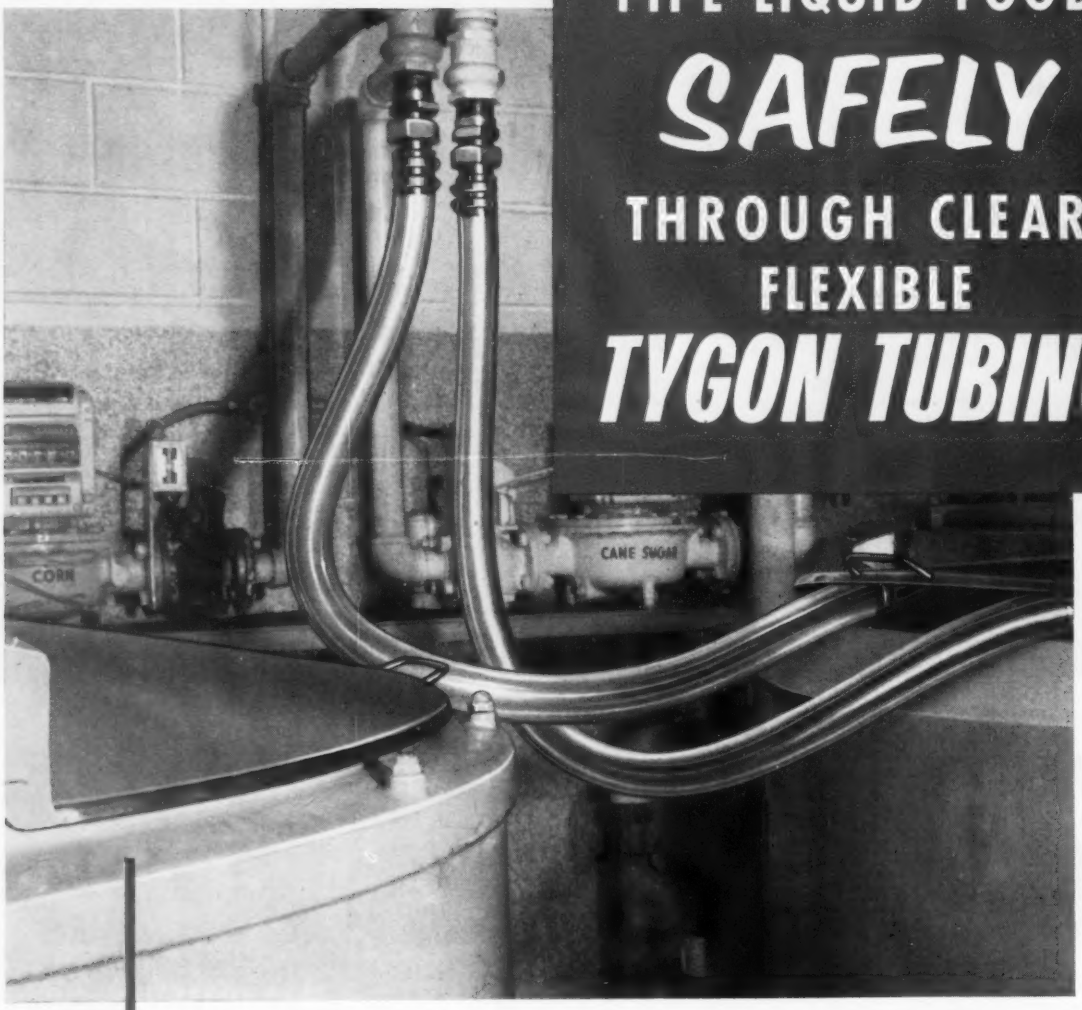

Less expensive than stainless steel, Tygon flexible-plastic Tubing combines the best features of both rubber and glass, without the disadvantages of either. It is the ideal piping medium for handling liquid food products.

Tygon Tubing gives you the solution visibility of clear glass, without the danger of breaking. It gives you the flexibility of rubber without the danger of contamination. Light in weight, strong, abrasion resistant, Tygon Tubing can go from "anywhere to anywhere" with fewer fittings, less assembly time.

A Tygon line can be dismantled, cleaned and re-assembled quickly. Tygon can be steam sterilized, or chemically cleaned.

Tygon Tubing comes in continuous lengths, and in bore sizes from ⅛" to 3". For full technical data write for Bulletin T-97.

177-F

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permeability to light, and (4) although it costs 70-80% more, it is actually cheaper due to the longer life.

To overcome difficulties encountered in washing the plastic bottles, it is suggested that modifications be made in mechanical washers, but that this is feasible.—*Schweiz. Milchztg*, 83(15), 98, 1957. (In German.)

Packaging Materials Studies Aided By Shock Recorders

For studies of the hazards packages are subjected to during shipment, a journey shock recorder has been devised.

It consists of a frame to which is attached a loose flap operating against a spring attached to a counter. When spring is sufficiently compressed by sudden stoppage of the recorder, counter is operated.

Up to 24 counters can be mounted in a block set to count once for a shock of predetermined strength. Blocks can be placed against each of the 6 sides of a shipping case to register shocks from any direction, and of different magnitudes.

The instrument gives information on drops and shunt type impacts. Vibration hazards can be measured by a recording instrument that draws a curve of the vibratory motions of the package. Compression hazards can be measured by observation in warehouse stacks.

For study of the efficiency of cushioning materials, a drop hammer apparatus is used to obtain load vs. compression, and acceleration vs. time curves for the materials. A creasing apparatus is also used to study the properties of cardboard used for making retail packages by automatic machinery. Here, prevention of cracking at the crease and reproductibility of dimensions is of fundamental importance.—*Chem. & Ind.*, 1656-63, Dec. 28, 1957.

Low-Toxicity Insecticides

New insecticides that are only ⅛ as toxic to warm-blodded animals as pyrethrum and ⅓rd as toxic as allethrin have been discovered by USDA chemists at Beltsville, Md.

They are derivatives of chrysanthemumic acid, a synthetic material

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SA—streamlined balloon jacket design. Extra large diameter provides greater heating surface. Sizes 15 to 500 gallons. Constructed for steam working pressures of 40, 90 and 125 pounds.

Hamilton kettles are quality engineered, designed for greater efficiency. You save on labor and costs of operation. Each part of a Hamilton Stainless Steel Kettle is designed for longer life, rugged usage; steam jacketed kettles are faster cooking, easy-cleaning. Specify Hamilton A.S.M.E. Code mixing and cooking kettles.

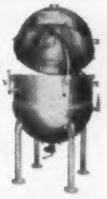
SA MIX COOKER—has single or double motion agitator with or without hydraulic lift. Agitator lifts easily and smoothly out of cooker. Sizes 30 to 500 gallons.

CW—designed to process batches up to 150 gallons. Positive worm gear. Handwheel gives control of capacity loads while tilting. Large diameter kettle gives fast even cooking.

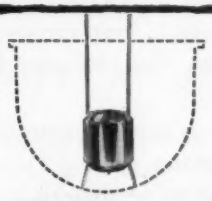
CW MIX COOKER—a hydraulic lift tilts agitator smoothly and easily out of tilting kettle. Available for 40, 90, 120 pounds steam working pressure.

PC—stainless steel pressure cooking kettle for meat and poultry processing. 90 p.s.i. in jacket and 15 p.s.i. in kettle. Quick opening latches. Top is lifted by eccentric lever. Sizes 30 to 250 gallons.

HV—vacuum cooker from 150 to 500 gallons. Hinged manhole provides access to the inside. Available with a mixer—circulator can be installed to increase heat transfer and agitation.



VT—vacuum cooker has no equal for small batches. Tilting top, easy loading. Sizes 30 to 150 gallons. Jacketed for 90 p.s.i. steam working pressure.



CIRCULATOR—stainless steel steam immersion heating unit installed in kettles of any size or shape. Gives heating surface at the center of kettle. Creates thermal agitation. Speeds up cooking 45%.

SB—shallow type kettle with balloon jacket. Streamlined. Constructed for working pressures of 40, 90, and 125 pounds. Sizes 15 to 350 gallons. Larger size kettle to meet specifications.

A—general purpose steam jacketed kettle used in processing food, drugs, and chemicals. Full ⅗ jacketed. 15 to 500 gallons. Available in Type 316 stainless steel or nickel. Larger sizes to specifications.

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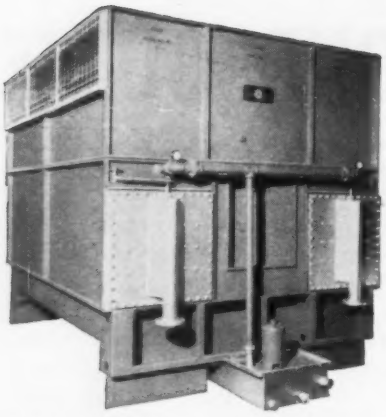

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Niagara machines do the work of a cooling tower plus shell-and-tube coolers with a single machine that saves piping, water handling disposal and treatment expense and 95% of water consumed by contact cooling methods.

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Advances in Technology

similar to an acid found in flowers of the chrysanthemum family. The 2 best esters were made with 6-bromo-piperonyl alcohol and 6-chloro-piperonyl alcohol.

In preliminary tests on insects, these compounds were shown to be equal or better than either pyrethrum or allethrin at high levels of kill, although somewhat slower in "knockdown."

Both compounds were less effective than DDT and other hydrocarbons. However, the new material gave good results against larvae of the common malaria mosquito, codling moth, salt marsh caterpillar, and southern army worm.

The esters, while considerably more expensive than DDT and other chlorinated hydrocarbons, cost less to make than allethrin.—*USDA 5-58, Jan. 2, 1958.*

2-Stage Sterilization Helps Evaporated Milk Stability

Employment of a 2-stage heating method in sterilization of evaporated milk improves storage stability when final temperature of 240-50F. are used. But when a temperature of 260F. is used, no particular benefit is achieved.

In a study of effects of various 2-stage sterilization procedures on the physico-chemical properties of evaporated milk, an intermediate holding period was introduced during heating and cooling stages.

Samples were held at 220F. for 10 min., and at 200 for 10 and 5 min., then heated, respectively, to 240F. for 15 min., 250 for 7 min., and 260 for 1 min., before cooling. For the come-down tests, samples were heated to sterilizing, held, then cooled to 220 or 200F. and held for the above times before the final cooling.

Inclusion of a come-up holding period produced a significantly greater viscosity than the corresponding single-stage processes at 240-50F. Difference was not significant in samples sterilized at 260F.

With the come-down holding period there were no significant increases in viscosity nor reductions in separation of immiscible material. Also, this method resulted in a darker colored milk than the corresponding come-up holding method. —*J. Dairy Science*, 1570-80, Dec. 1957.

*Among the North American Indians, lean meat, dried and pounded fine, packed in sacks of hide.

*PEMMICAN KEPT FOR MONTHS IN THE SUN But Tasted Like Baked Leather

Long before Columbus first put foot upon the New World . . . the North American Indians were preserving meat by a basic process of dehydration. They called their product *pemmican* . . . and while it served the purpose of light weight and long shelf life, its miserable taste discouraged even hardened explorers. Today, dehydration as a preservative method is finding important new uses, and industry, spurred by successes of the Army Quartermaster Corps, is going all out in the development of dehydrated soups, sauces, gravies, dressings and even entire meals such as meat and noodles, chili con carne and chicken-a-la-king. Working hand in hand with the food technologist is the flavor chemist. It is his job to see that the convenience advantages of dehydrated products are not nullified by poor or insipid taste appeal. The D&O Dry Materials Division has put intensive research effort into the development of DOLCO-SEAL (spray dried) flavors and seasonings whose locked in flavor properties meet the special requirements for modern dehydrated food products. Let DOLCOSEAL (spray dried) flavors help you give your customer for dehydrated products pleasure . . . not pemmican!

Essentially for You

Our 159th Year of Service

DODGE & OLCOTT, INC.

180 Varick St., New York 14, N. Y.

Sales Offices in Principal Cities

D&O ESTABLISHED 1798

Essential Oils *Aromatic Chemicals*

Perfume Bases *Flavor Bases* *Dry Soluble Seasonings*

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ALMOST EVERYWHERE YOU TURN THERE'S A MEAD CONTAINER PLANT TO SERVE YOU!

Mead corrugated shipping container plants are strategically located wherever industry is concentrated. That means you get prompt, personal service, lower costs and flexible local deliveries. In addition, you get all the other advantages of a completely integrated, nation-wide organization.

Mead's multi-plant operation guarantees you a sure source of supply of corrugated shipping containers with quality controlled all the way from forest to finished product. You also get the industry's most extensive research facilities plus Mead's comprehensive design and engineering facilities to help solve your container problems quickly, efficiently, economically. Call your Mead representative soon.

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MEAD CONTAINERS, INC.
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Executive Offices, Cincinnati
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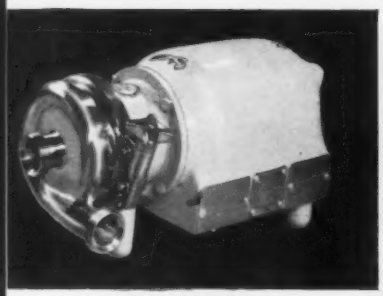
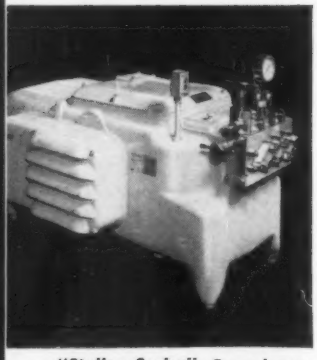


"Flexflo" Pumps. Complete line of centrifugals, in polished 316 stainless and unpolished finish. Capacities from 2,000 through 210,000 lb. hr.; ¼ h.p. to 30 h.p. WRITE FOR BULLETIN G-524.

"Superplate" Heat Exchangers for continuous, closed-circuit heating, cooling and regenerating. Electropolished knob-type plates of either 304 or 316 stainless. WRITE FOR BULLETIN G-515. Wide range of capacities available.

with this CHERRY-BURRELL equipment ...corrosion, flow control and heat transfer pose no problems



"Stellar Series" Superhomo Homogenizers. Single and two-stage Stellite homogenizing valves with replaceable valve caps of 18-8 stainless. Nine models from 50 to 5,000 g.p.h. WRITE FOR BULLETIN G-517.

Who knows your processing problems better than *you*? Nobody, of course.

Who knows Cherry-Burrell equipment better than *we* do? Again, nobody.

So why not, as so many do, *combine* this knowledge to solve your particular problem? Let us help analyze your needs . . . then recommend suitable corrosion-resistant processing equipment . . . even help install it for you.

Cherry-Burrell Engineers are at your service—*wherever, whenever* you need them. All are field-wise in setting up continuous processing systems to handle a wide variety of food products, at high and low temperatures.

Give your Cherry-Burrell Representative a ring *soon* . . . see what we mean by Sales and Service in 58 Cities — U. S. and Canada.

CHERRY-BURRELL
CORPORATION

427 West Randolph Street, Chicago 6, Illinois

Dairy • Food • Farm • Beverage • Brewing • Chemical • Equipment and Supplies

SALES AND SERVICE IN 58 CITIES—U. S. AND CANADA

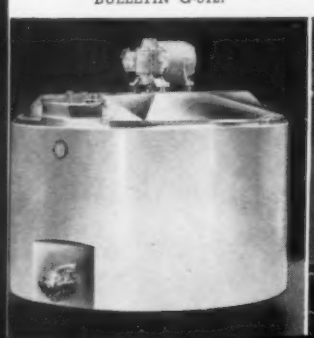
"Round Processors." Heavy-duty vats for zone control heating, cooling. Scraper blade and propeller agitators. Four models including vacuum and pressure processors. Sizes to 1000 gals. WRITE FOR BULLETIN G-512.

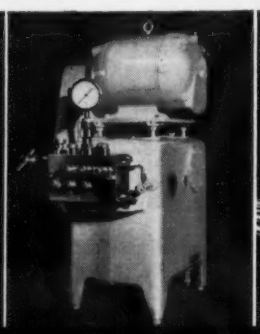
Tanks: *Open-top type* for storage, surge, side or bottom mixing. Six sizes from 60 to 500 gallons. WRITE FOR BULLETIN G-502. *Closed-top type.* Horizontal and vertical shapes, sizes to 5000 gallons. WRITE FOR BULLETIN G-506.

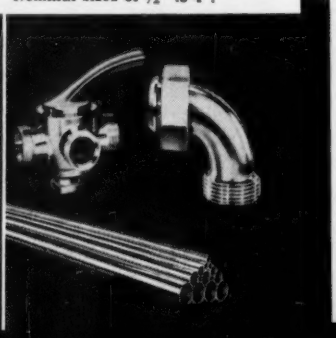
Uni-Seal Valves with rubber-covered interchangeable cast alloy plugs eliminate galling and scoring; unaffected by normal cleaning solutions. Sizes: 1", 1½" and 2". WRITE FOR BULLETIN G-527.

"Stellar-Flo" High Pressure Pumps. Four sizes for pressures up to 6,000 p.s.i., capacity range: 100 to 1,000 g.p.h. Five sizes for pressures up to 3,000 p.s.i., capacity range: 50 to 1,500 g.p.h. WRITE FOR BULLETIN G-537.

Tubing and Fittings. Complete lines of stainless steel tubing and fittings. WRITE FOR BULLETIN G-443. Also, *PVC Tubing.* Unplasticized polyvinyl chloride for corrosive services under moderate temperatures and pressures. Nominal sizes of ½" to 4".







MEN & COMPANIES

H. J. Heinz II

Study Fats and Heart . . . H. J. Heinz II has spelled out details of dietary research under way by Nutrition Foundation.

Mr. Heinz, head of H. J. Heinz Co., is newly-elected president of the Foundation.

The 3-yr. $700,000 program will explore possible relationships between diet and heart functions.

"If these studies justify changes in food manufacturing, the industry will take whatever steps are indicated," Mr. Heinz states.

Dr. C. G. King, executive director of the Foundation, points out: "Whether, or in what manner, fats are related to heart disease and atherosclerosis is still not established.

"It is clearly recognized that the primary cause of overweight is not eating fat, but eating more calories than the body requires, whether from fats, sugars, or proteins.

"For the general public, the balanced diets recommended by nutrition scientists are far superior to the extreme diets often promoted to avoid the use of fats."

Prepackaged Savor . . . Bruce L. Durling, new president of Wm. J. Stange Co., pinpoints a further responsibility for today's processor.

"Prepackaged and prepared foods shift the task of flavoring and seasoning from the housewife to processor," he notes.

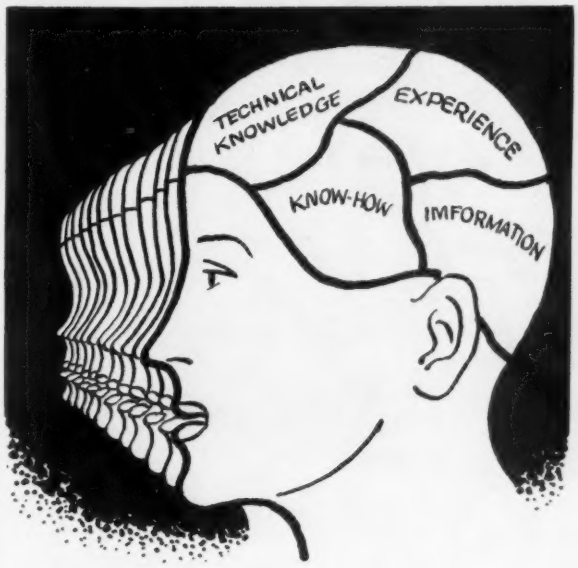
Since 1954, Mr. Durling has been director of Stange's technical and research depts. He steps into presidential shoes of his father, W. B. Durling, now board chairman.

Bruce L. Durling

G. R. Detlefsen

Growth Targeted . . . Pillsbury Mills, Inc., announces its intention "to grow in all possible related fields." It has created post of v.-p.-for-growth, and earmarked $4½ million for plant expansion, stepped-up research, and introduction of new products.

Elected to the new post is G. R. Detlefsen, 38, Harvard graduate in economics. He will coordinate all growth programs. He has been chairman of the company's research and development committee since '54.



WHEN TWELVE HEADS ARE BETTER THAN ONE!

Are you considering a new product? Would you be interested in improving the market appeal of your present products? Are you interested in an impartial analysis of your present spice and seasoning ingredients?

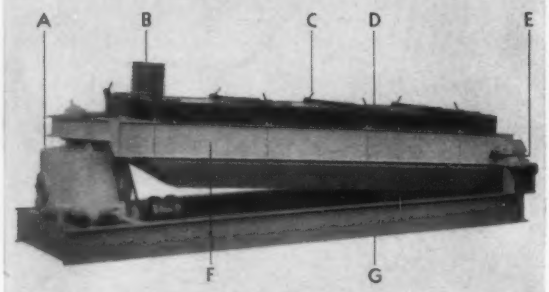
The laboratory and production staffs of The Baltimore Spice Company are your most valuable source for technical knowledge and sound advice. Our products and services are well known by meat packers, canners, bakers and producers of food specialities. Our seasonings are a part of many successful branded items and as one of our customers expressed it "It's the flavor that wins customer favor".

Food manufacturers have found The Baltimore Spice Company competent and cooperative in solving many taste problems. You'll find it most advantageous to drop us a line about your seasoning requirements.

The BALTIMORE SPICE Company

12 S. Front Street • Baltimore 2, Md.

ROTEX® SCREENERS
GIVE PROFITABLE PRODUCTION!



A Quiet Running Counter-Balanced Drive
B Flexible Rubber Inlet and Outlet Sleeves
C Quick Release Cover Clamps
D Rubber, Dust-Tight Inspection Ports
E Self-Aligning Slide Bearings
F All Metal Screen Box
G Heavy Welded Structural Steel Base

For over 40 years ROTEX Screeners have been widely used throughout industry. Today there are installations in the United States and over 25 foreign countries. Built for dependable service, ROTEX are long known for accuracy, capacity and operating economy.

ROTEX SCREENING ACTION:

The nearly level, gyratory motion, pioneered in ROTEX, conveys materials rapidly over screen surfaces with minimum vertical vibration or hop. This stratifies the material by particle size, rapidly passing undersize particles through the mesh openings. The results are clean separations of exacting accuracy coupled with high capacity. Designed for operating convenience, ROTEX Screeners pay for themselves by the economies they effect.

ROTEX WIDE SELECTION:

To meet your requirements: 25 standard models—one to five screen surfaces—many semi-standard and special models—sanitary and all-metal construction available.

Write for Bulletin 401 and information on your screening requirements. Our engineering staff will be pleased to cooperate with you.

ROTEX FEATURES

- Low head room
- No screen blinding
- Fast screen changes
- Dependable service
- Dust-tite construction
- Rugged construction

ROTEX® The Orville Simpson Co.
1226 Knowlton St., Cincinnati 23, Ohio

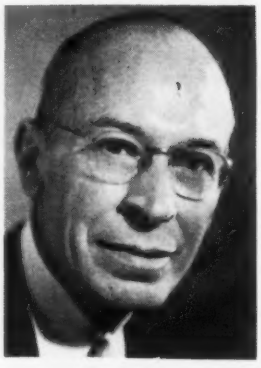
"Operation Survival" . . . "Conversion from batch to continuous processing can mean 'operation survival' for a food plant." So notes John E. Slaughter, Jr., president of new Girdler Process Equipment Div., National Cylinder Gas Co.

NCG has signaled accelerated trend to continuous methods by forming separate division to supply needed automatic equipment.

Mr. Slaughter has been in charge of Votator Dept.

V.-p. of the new division is Lyman L. Dawson.

John E. Slaughter, Jr.



Theodore O. Hofman

Sales Advantage . . . Borden Foods Co., a new division, is aimed at meeting changed selling demands.

Year-long study by Borden's took account of chain and supermarket stores' effects on merchandising. Result: An inter-company 'merger' of cheese and food-products units.

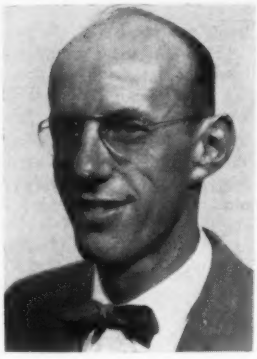
Division president is Theodore O. Hofman, who has also been upped to v.-p. of parent company. He will relinquish his post of general controller, held since 1946.

Bottlers' Award . . . Smoothing out further rough spots in silicone-coating process for strengthening glass has won the 1957 Chesterman Award for Dr. James P. Poole, research director of Brockway Glass Co.

Process adds to glass strength by preventing scuffing and abrasion of surface.

Citation, with $1,000, is sponsored by American Bottlers of Carbonated Beverages.

Dr. Poole was 1950 winner of Frank Forrest Award for work on glass viscosity.



Dr. James P. Poole

Joseph S. Atha has been elected president of J. A. Folger & Co. Other officers elected are: Russell E. Atha, chairman; C. R. Johnson, v.-p. and treas.; and R. E. Atha, Jr., v.-p.

Dick Bishop will fill new-made post of marketing director at Seabrook Farms.

Charles B. Broeg heads new-products planning dept. of American Molasses Co.

Stuart W. Brown has been named head of the frozen food dept., Swift & Co., Chicago.

E. Donald Burns, of Mrs. Schlorers, Inc., Philadelphia, is new president of National Prune Juice Packers Assn., Inc.

Edward E. Burns, head of Alton Canning Co., Inc., Alton, N. Y., is 1958 president of National Canners Assn. **Norman O. Sorensen**, board chairman of Country Gardens, Inc., Mil-

The Importance of

DEPENDABLE SUPPLY

Whether he's going down for sport or for salvage, the experienced aqualung diver first makes a careful check of his compressed air supply—a simple precaution that can avert serious trouble a few fathoms down.

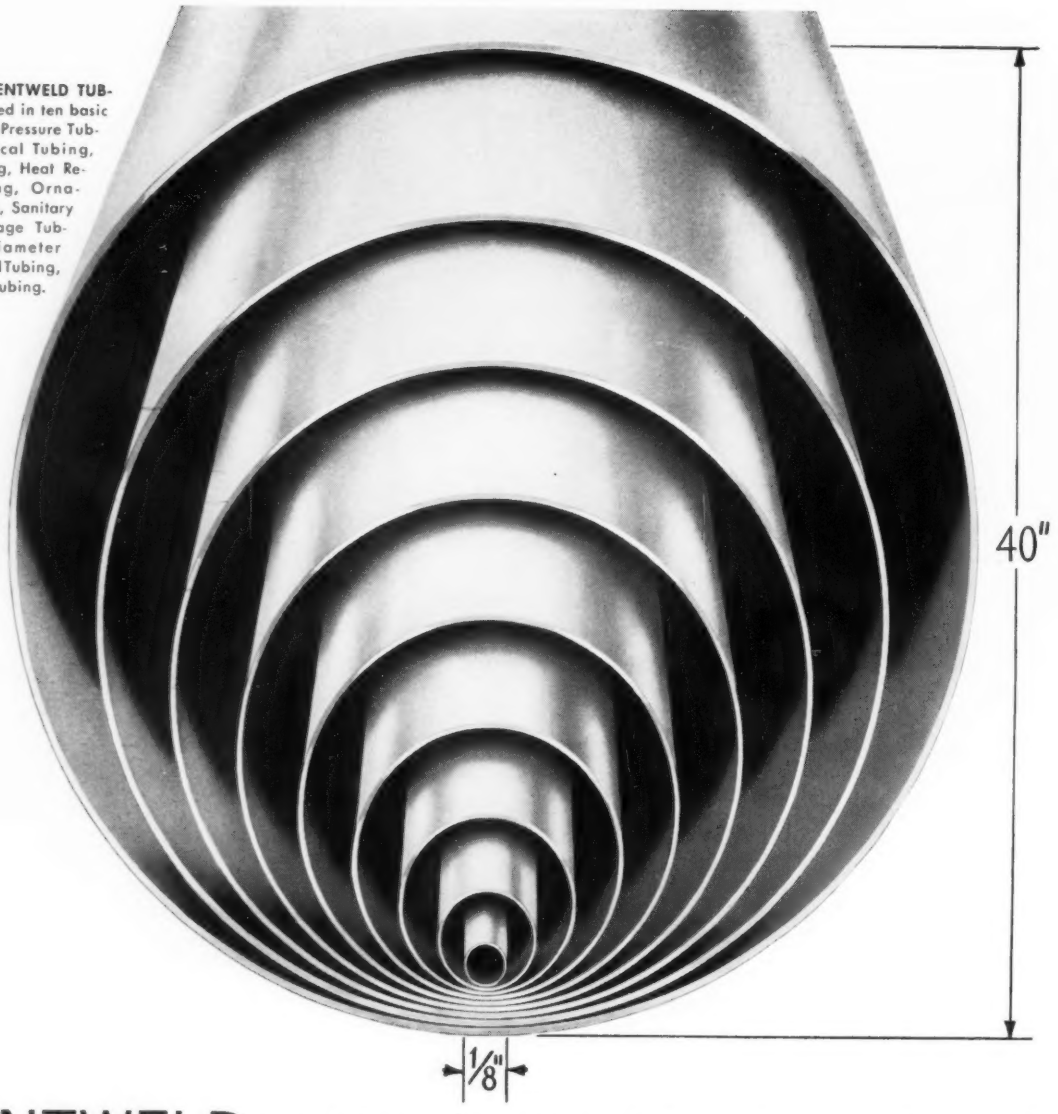
Metro puts the same emphasis on dependable supply . . . takes every step to assure its customers an uninterrupted flow of quality glass containers in strict accordance with production schedules. Packers of soluble coffee, jams and jellies . . . brewers, vintners, distillers . . . bottlers of household chemicals and other diversified products . . . all have found flexible METROmatic service ideally suited to their particular requirements.

METRO GLASS COMPANY, INC.

MANUFACTURERS OF QUALITY GLASS CONTAINERS

WASHINGTON, PA. JERSEY CITY, NEW JERSEY CHICAGO, ILL.

CONTOUR TRENTWELD TUBING is furnished in ten basic classifications: Pressure Tubing, Mechanical Tubing, Aircraft Tubing, Heat Resistant Tubing, Ornamental Tubing, Sanitary Tubing, Beverage Tubing, Large Diameter Tubing, Shaped Tubing, and Formed Tubing.



TRENTWELD tubing is equal in strength and has more uniformity than tubing made by any other method of manufacture

Trent offers tubing in sizes ranging from ⅛" to 40" O.D. and in a wide range of grades. These include: Hastelloy,* Zirconium, Zircaloy, Titanium and 19-9-DL grades. All are made by an exclusive welding process—Contour Trentweld®—which virtually eliminates the bead. Furthermore, by cold working and annealing after welding, Trent makes the weld equal in strength and corrosion resistance to the parent metal.

To insure that Trentweld tubing is of the highest quality attainable, a rigorous quality control program is carried out. Samples of each lot are tensile tested. Periodic tests — flattening, reverse bend, flare and flange, coil, and pressure — are conducted. Rigid corrosion tests are made on all lots intended for corrosive applications. When requested, a unique "single-wall" X-ray inspection is made as your final assurance of a sound, uniform product.

Why not take advantage of Trent *quality* when you order stainless or high alloy tubing? For further information, write for the Trent tubing handbook, Trent Tube Company, East Troy, Wisconsin.

*Trademark of Haynes, Stellite Co.

CONTOUR TRENTWELD

TRENT TUBE COMPANY

Subsidiary of Crucible Steel Company of America

GENERAL OFFICES: EAST TROY, WISCONSIN
MILLS: EAST TROY, WIS.; FULLERTON, CALIF.

Outstanding safety record of C. H. Musselman Co.'s Biglerville, Pa., plant takes top honor. Photo shows Glenn M. Rider, safety director, and George F. Martin, supt., accepting plaque from J. Charles Hoffmaster of Pa. Mfrs. Assn. Casualty Insurance Co. Musselman's accident frequency rate of 2.38 is far under national average for preserved and canned foods field of 10.91 disabling accidents per million man-hours worked.

waukee, is v.-p., and **Carlos Campbell** continues as exec. sec'y.-treas.

George Hampton steps up to sr. exec. v.-p. of General Foods. **Wayne C. Marks** succeeds him in his former post of exec. v.-p. of operations.

Adolph R. Hraba, of Alderman Frozen Foods, Inc., Dayton, Ore., is 1958 president of Northwest Packers & Growers, Inc.

Edward V. Lahey has been reelected chairman and president of U. S. Brewers Foundation.

Dr. Wendell A. Landmann is new chief of the division of analytical and physical chemistry for American Meat Institute Foundation.

Industry

Anheuser-Busch, Inc., has purchased Miami, Fla., brewery of American Brewing Co. Plant has annual capacity of up to 400,000 bbl.

Curtiss Candy Co. has revamped its sales organization in 8 north central states. This is third move in its decentralization drive. New division manager is G. R. Kilsberg.

DCA Food Industries Inc. has acquired F. W. Stock & Sons Co., Mich., in latest expansion step. President David Levitt estimates DCA's total 1958 volume should exceed $60 million.

Dry Materials Div. is new name of Dry Solubles Div., Dodge & Olcott, Inc. The Hawthorne, N. J., plant has been enlarged to process spray-dried products.

General Foods Corp. has started construction of a new distribution center and sales office at Youngstown, Ohio.

Associated Industries

Continental Can Co. will be new occupant of the 7-acre Crown Zellerbach plant in San Leandro, Calif.

High Voltage Engineering Corp. announces it has acquired controlling interest in Electronized Chemicals Corp., New York City.

Monsanto Chemical Co. upped its 1957 research expenditures to $22.7 million, as compared to $19.2 million in 1956. Firm reports its overall capital expenditures for '57 at $90.1 million.

Deaths

William H. List, Jr., 53, exec. sec'y. of Assn. of Ice Cream Mfrs. of New York State.

Frank M. McIntire, Jr., asst. sec'y. of American Assn. of Candy Technologists.

Harry von Loesecke, 59, US DA authority on food technology and biochemistry.

Samuel L. Willard, 83, retired v.-p. of Coca-Cola Co.

How does your product rate?

Is it "in the bag" at the check-out counter or blissfully gathering dust on the shelf? A consumer's taste reflects directly on your profit. Develop that taste for your product by including **P & S flavors** in all your formulas.

Put taste in your product by writing for a free sample now! No obligation.

POLAK & SCHWARZ, INC.

667 WASHINGTON ST., NEW YORK 14, N.Y.

Offices: Chicago, Ill.; Los Angeles, Calif.; Toronto, Can.; Plants: Teterboro & Guttenberg, N.J.; Culver City, Calif.; New York, N.Y.

CARNATION MAKES MILK MAGIC

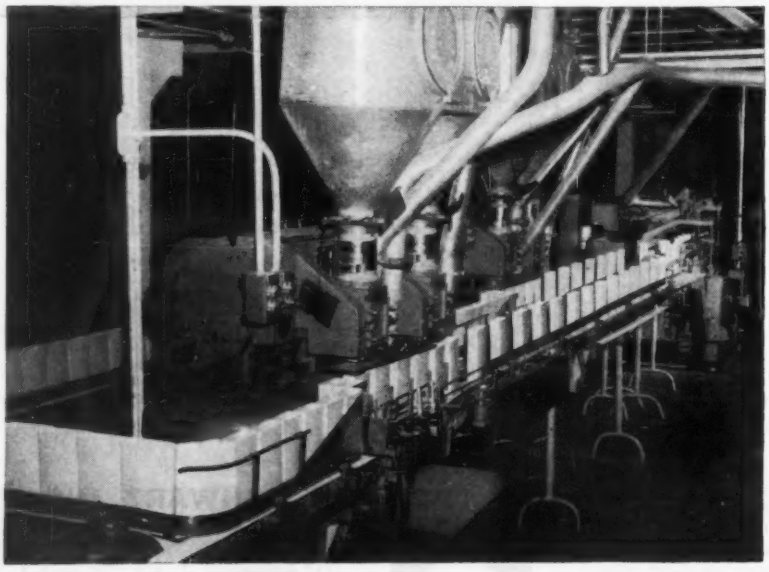
• New instant crystals packaged on Pneumatic equipment

The latest type of nonfat dry milk bears, naturally enough, one of the greatest and most progressive names in milk and allied products of this day and age — Carnation.

Carnation's long time slogan "from contented cows" now includes its new magic crystals that produce delicious nonfat milk instantly — when added to water. Pour, stir and serve — that's all there is to it.

Carnation's packaging of its new product is made easy, efficient and economical by its use of Pneumatic carton forming, filling and sealing equipment. Like countless other leading volume producers of packaged products Carnation uses Pneumatic machines in the highly important packaging function.

Pneumatic's "lower cost per container" operation repeats itself in plant after plant because it is an inevitable result of sounder design, more advanced engineering and a type of precision construction that has never been perfected to the same high degree by other machine makers.



Weighing and top closing operations of fully automatic packaging line in Carnation's plant at Oconomowoc, Wisconsin.

With the present day emphasis on greater production efficiency as a means to better profits, many plants are taking a new and more critical look at their packaging and bottling, to weed out costly obsolescence. There's almost always a better way with Pneumatic equipment.

PNEUMATIC SCALE CORP., LTD.,
91 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delamere & Williams Company, Ltd., Toronto.

★PNEUMATIC

BOOTH 505 at P M and M E of 1958, Atlantic City — March 25-28

Van body mounted on Dodge D500 chassis with Custom cab.

How Dodge saves you money by matching your truck to your needs

Dodge medium- and heavy-duty trucks have always been built from a wide range of "Job-Rated" components to match a truck exactly to your job. This means that you aren't forced to pay for capacity you don't need, and you don't get undersized units that shorten your truck's life. Just look at the range of components today's line of *Power Giants* offers:

In power, there are Sixes from 125 to 141 hp., Power-Dome V-8's from 204 to 234 hp. Exclusive Power-Dome V-8 design reduces harmful carbon deposits, greatly reducing the need for engine overhauls to maintain maximum power.

In payload, numerous Dodge medium- and heavy-duty models offer G.V.W.'s from 11,000 to 46,000 lbs., G.C.W.'s from 30,000 to 65,000 lbs. in gradual steps. A wide range of "Job-Rated" axles, transmissions, tires, springs and other components makes possible gradual increases in capacity and assures you a dependable, economical truck because it fits your job exactly.

In economy, Dodge provides the thriftiest and most efficient engine and transmission combinations. A range of eight engines and eight transmissions, including automatic Torqmatic, makes this possible. You save on gasoline, too, because Dodge engines operate efficiently on regular gasoline!

Priced competitively throughout the line, in many models Dodge is priced *lowest!* No matter what Dodge *Power Giant* your job calls for, you'll be agreeably surprised at its thrifty price tag. See your Dodge dealer soon, and get his special 40th-Anniversary deal!

DODGE *Power Giants*

For more data, circle this page number on card at back →

It's the Nash!

The ability of Nash Compressors to maintain original performance over long periods is no accident. Nash Compressors have but a single moving element, the Nash Rotor. This rotor is precision balanced for long bearing life, and it revolves in the pump casing without metallic contact. Internal lubrication, frequent cause of gas contamination, is not employed in a Nash. Yet, these simple pumps maintain 75 lbs. pressure in a single stage, and afford capacities to 6 million cu. ft. per day in a single compact structure.

Nash Compressors have no valves, gears, pistons, sliding vanes or other enemies of long life. Compression is secured by an entirely different principle of operation, which offers important advantages often the answer to gas handling problems difficult with ordinary equipment.

Nash Compressors are compact and save space. They run without vibration, and compression is without pulsation. Because there are no internal wearing parts, maintenance is low. Service is assured by a nation-wide network of Engineering Service offices. Write for bulletins now.

- No internal wearing parts.
- No valves, pistons, or vanes.
- No internal lubrication.
- Low maintenance cost.
- Saves floor space.
- Desired delivery temperature Automatically maintained.
- Slugs of liquid entering pump will do no harm.
- 75 pounds in a single stage.

NASH ENGINEERING COMPANY
312 WILSON, SO. NORWALK, CONN.

How Research Shapes Our Future Prosperity

If you are looking for an industry that is going to keep on booming in 1958 and every year for the next decade, here it is. It is the industry of technological innovation through research and development.

Last year this great new industry spent over $7 billion to discover and develop new industrial products, processes and equipment. This year the preliminary McGraw-Hill survey indicates that total expenditures for industrial research and development will be even greater, perhaps as much as $8 billion. Of the companies surveyed, 57% plan to spend as much as in 1957 and 38% plan to spend more.

The sustained expansion in research and development is the best guarantee we have that the current decline in business investment in new plants and equipment will be relatively short-lived. There can be no prolonged decline in investment in an economy where technology is changing rapidly.

This editorial is designed to show how the continued surge in research and development can be expected to lead first to new products, and eventually to renewed expansion of investment in new industrial plants and equipment. Such expansion is the essence of national economic growth.

A Slow Start

The impact of research on sales and investment is still very gradual. Research spending itself has more than doubled in the last four years. But only 32% of all manufacturing firms report significant capital outlays to make new products. We are not reaping the full dividends of industrial research as yet for several reasons:

- Research expenditures were relatively small until the Korean War of 1950 brought substantial government contracts in aviation, electronic and related fields. Heavy research outlays for civilian and industrial products came even later.
- There is an average *lag*, according to research directors consulted by the McGraw-Hill Department of Economics, of roughly seven years from the start of research until the product is ready for large scale output — about five years of research and at least two years to solve production problems and develop markets.
- Complex products, such as new consumer durables and industrial machinery, have an even longer time lag.

However, new developments are certainly underway. Research began to increase in all lines of business when Korean War restrictions and

the excess profits tax came to an end in 1953. The tax revision of 1954 added a new incentive by making research outlays deductible as a current business expense. By 1955, the research boom was on.

When Is The Payoff?

With a lag of about seven years, it will be the early 1960s before these new developments become a dominant factor in capital investment. But once the flow of new products and new processes starts, it will accelerate sharply — just as research spending has accelerated in the past few years.

By 1960, over $50 billion in sales will be coming from products not on the market as recently as 1956. Sales of new products will increase year by year, but they will gain most in 1960-1962, or five years after the recent spurt in research expenditures.

Capital expenditures to manufacture new products will also rise, but with a slightly longer lag. Here the sharpest rise should come in 1962-1965, as the new products reach a volume that calls for a significant amount of new capacity. In most cases, initial output of new products will come from existing capacity.

This timing of a new wave in capital investment appears logical on other grounds. Population experts forecast an upsurge in marriages and births around 1965. So by 1962, industry will be starting to tool up for new mass markets.

The important point is this: As we approach the 1960s more and more sales and investment will be in new products growing out of research. By 1960 well over 10% of manufacturing sales will be in new products not on the market in 1956.

Meanwhile — research will help stabilize capital spending by raising the level of modernization and replacement expenditures. Of course, research does not eliminate all the ups and downs in the demand for capital goods, for there remain variations in the amount spent to expand capacity. But a high level of modernization, to cut costs and improve quality, does put a floor under any drop in investment.

What To Expect

During the next few years we can expect an increasing flow of new materials, new metallic alloys, new machinery — primarily those developments coming out of long-established research programs in the chemical and electrical industries. Industry will make wider use of specialized computers and automated equipment.

But the dramatic payoff on research comes even later. In the early 1960s the consumer goods industries will begin tooling up for their really new products — things so basically new they can change the way a family lives. Such items as plastic houses, paper apparel, turbine autos are under development right now. But it will take several years to get costs down and for population and incomes to grow to the point where mass markets are created.

When we reach that point in the mid-1960s, there will begin the greatest surge of capital investment in all history. And then — around 1965 — the new processes (full automation, atomic power, continuous steel casting) which are the slowest and most expensive part of the research chain to develop, will come into play.

The combined impact of new products and new processes, to meet an expanding market, will thus be felt in the mid-1960s — eight to ten years after the recent sharp increase in research spending. The full impact is that far away because of the lags for applied research, pilot plant studies and market introduction. But to a large degree the prosperity of the 1960s has already been shaped by the research programs now underway.

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Donald C. McGraw
PRESIDENT

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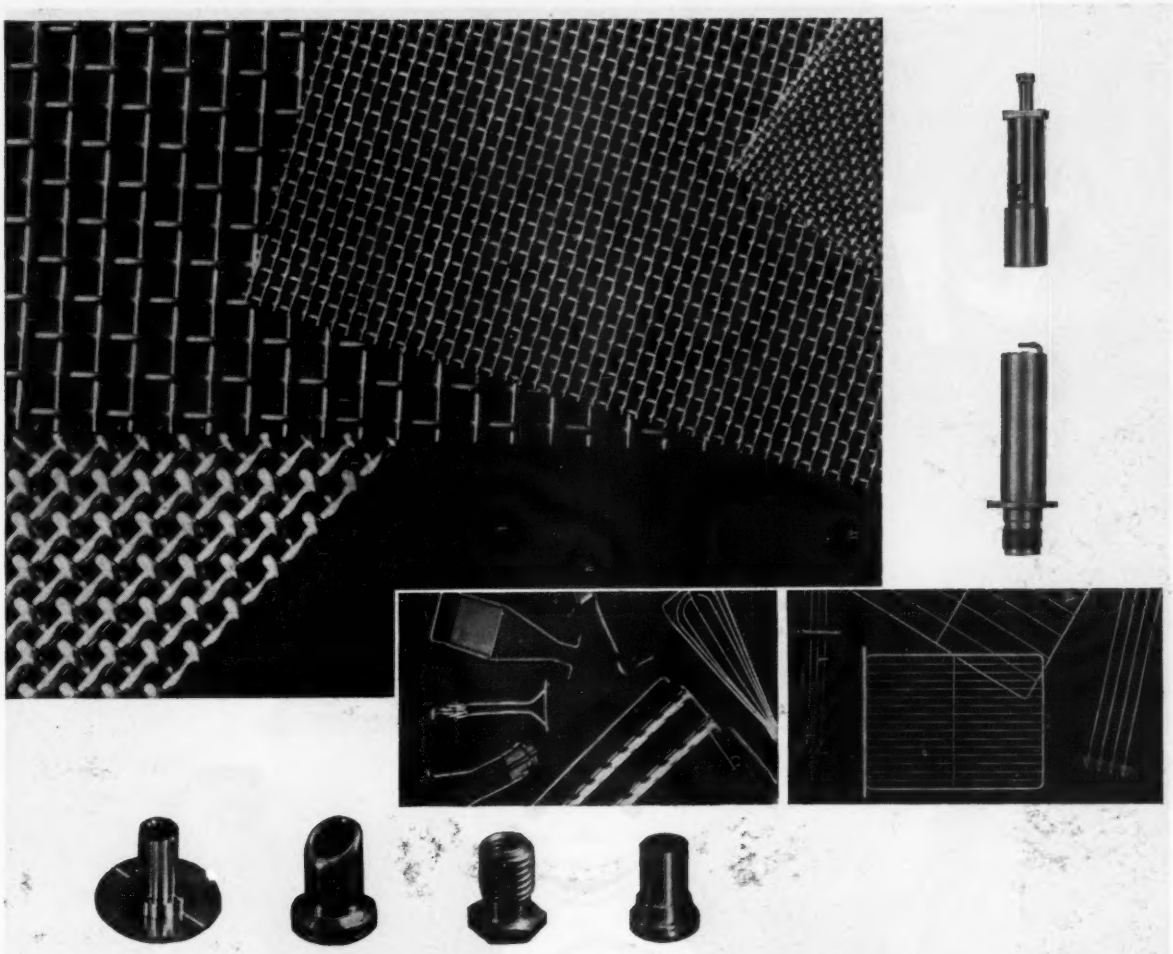

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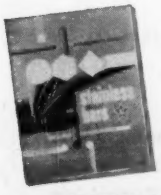

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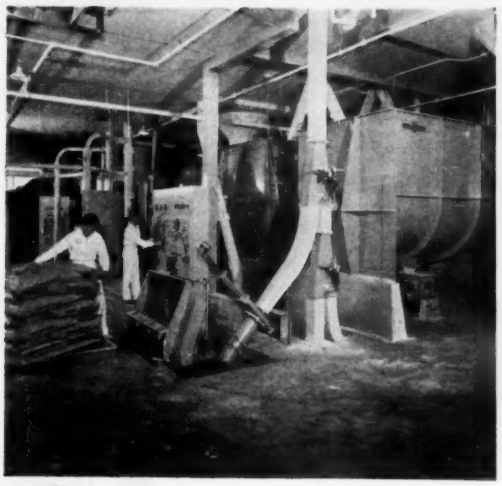
SPROUT-WALDRON

Pointers

for Mixing and Blending • Size Reduction
Size Classification • Bulk Materials Handling • Pelleting and Densifying

Published in the interest of better processing by Sprout, Waldron & Co., Inc., Muncy, Penna.

Versatile Starch System Steps Up Capacity



Blending and packaging starches at the new Morningstar Nicol plant is faster, cleaner and more economical thanks to pre-planning for versatility, selection of the right unit machines and air handling.

Vice President Edward Hillary credits advance planning of the entire system with Sprout-Waldron engineers for the extreme versatility. Material may be injected as received, or passed through S-W precrushers and grinders. From one control point, the operator may direct the material into either of two S-W mixers, or bypass them. From the mixers he can discharge and pass through sifters, or if he chooses, bypass them. He can mix and sift, mix without sifting, or dump material from any one of three floors and bypass all mixing and sifting.

Movement of the material is handled by Pneu-Vac, the S-W negative pressure air handling system. This means minimum dusting and trouble-free operation even when moving starch at rates up to 30,000 lbs./hr. Chief Chemical Engineer, Ken Sterrett lived with this installation from the beginning. If you have any questions, he's your man.

— SW —

PELLETS CUT COSTS

Pelleted materials are attracting wide interest in chemical and related process industries because their many advantages are being translated into lower operating costs and fewer problems.

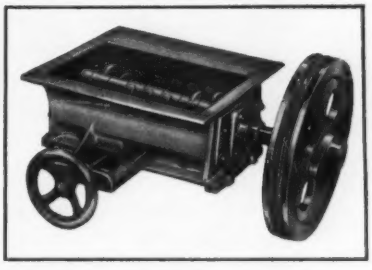
By compressing powders into dense pellets we get material which is dust free; easy to handle, store or package; more economical for drying or cooling; safer and more pleasant to process.

Sprout-Waldron's Pellet Ace has been specified for cellulose acetate, Fullers earth, clay, coal, detergents, graphite, insecticides, kaolin, lignite, polyethylene, sodium nitrate and nitrite, superphosphates, etc. Ask for Bulletin 182 or send your pelleting problems to Joe Grahek, Chief Engineer, Pellet Division.

Salt Slabs Reduced With 18" Crusher

In the manufacture of cellulose sponge it is necessary to reduce the large slabs of glaubers salt, before they can be used efficiently. Although the S-W Single Roll Crusher seemed like a natural for this application, it had to be "adaptioneered" in order to minimize the production of fines which usually occur when handling a material so friable.

"Adaptioneering," the science of adapting standard equipment for special engineering applications is a Sprout-Waldron specialty. For example, Model 104 Single Roll Crusher has been used for reducing



glass, plastics, coal, coke, charcoal, carbon, sulphur, salt, clay, silica gel, urea, dye, bricks, paint pigment, brake linings, roofing shale and a wide variety of other difficult to handle materials. For the facts about this versatile crusher, write for Bulletin 116-A; for assistance in any size reduction problem, contact any S-W representative or drop a note to our Engineering Department.

Sprout-Waldron has a condensed catalog available for your use. Ask for Bulletin 178.

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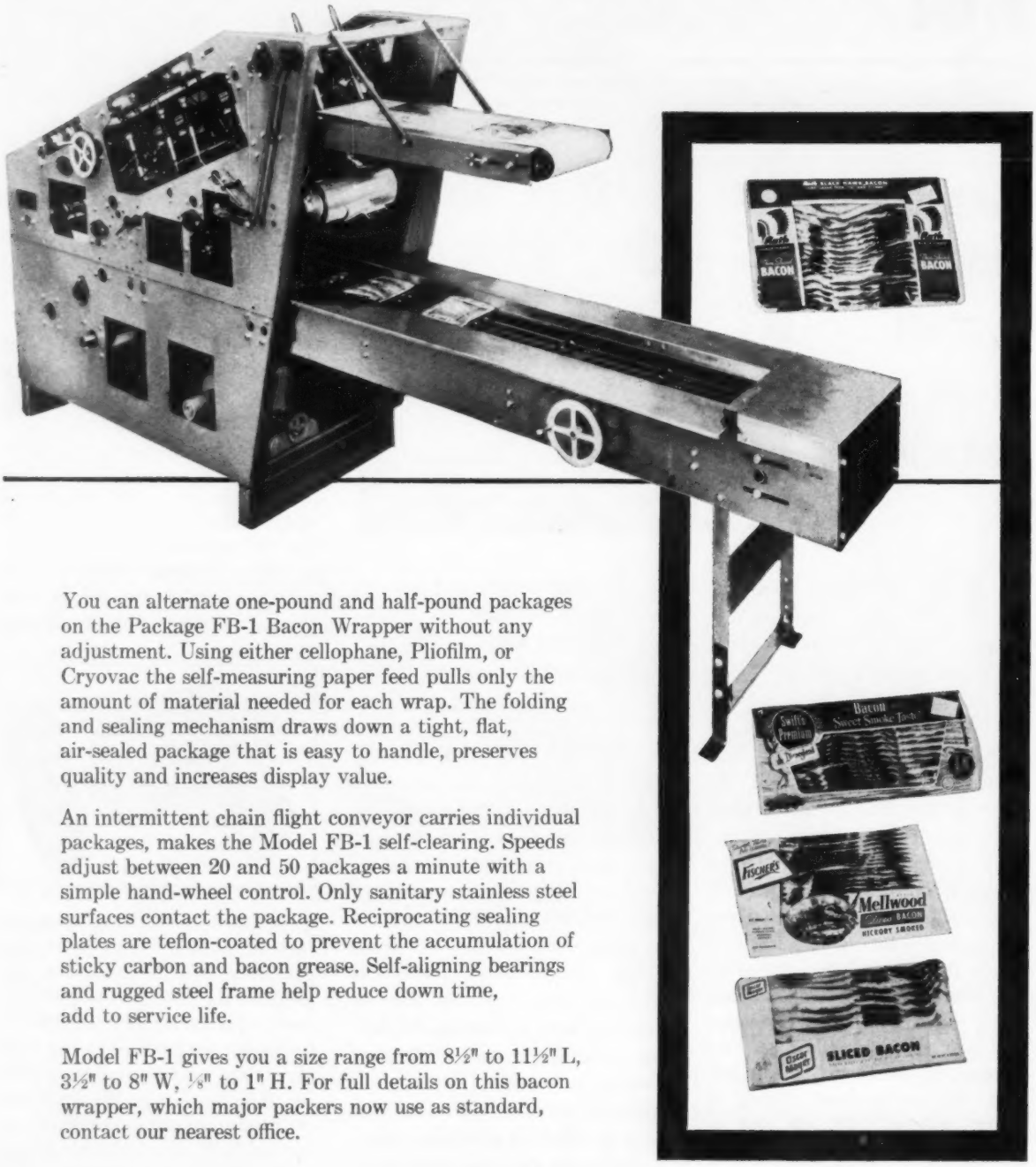
WRAP TIGHT, ATTRACTIVE BACON PACKAGES

WITHOUT SIZE ADJUSTMENTS



You can alternate one-pound and half-pound packages on the Package FB-1 Bacon Wrapper without any adjustment. Using either cellophane, Pliofilm, or Cryovac the self-measuring paper feed pulls only the amount of material needed for each wrap. The folding and sealing mechanism draws down a tight, flat, air-sealed package that is easy to handle, preserves quality and increases display value.

An intermittent chain flight conveyor carries individual packages, makes the Model FB-1 self-clearing. Speeds adjust between 20 and 50 packages a minute with a simple hand-wheel control. Only sanitary stainless steel surfaces contact the package. Reciprocating sealing plates are teflon-coated to prevent the accumulation of sticky carbon and bacon grease. Self-aligning bearings and rugged steel frame help reduce down time, add to service life.

Model FB-1 gives you a size range from 8½" to 11½" L, 3½" to 8" W, ⅛" to 1" H. For full details on this bacon wrapper, which major packers now use as standard, contact our nearest office.

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NEW EQUIPMENT & SUPPLIES

Electronic Computer

Automates Process Control

This compact unit provides the link between measuring instruments and process controllers, thus can cut operating costs and improve product quality.

A digital computer, it fully automates control of any continuous or batch operation, provided important variables can be gaged and related to control functions. For example, raw-material streams may be continuously analyzed and flow rates adjusted to regulate product uniformity.

In addition, unit (RW-300) may be used for data logging and test-stand operation.

In the former application, computer performs all calculations required to convert instrument readings into data immediately available for processing, or for subsequent engineering and research use.

In process control, computer receives signals directly from measuring devices and converts them to digital form. Next, input data are interpreted and all required calculations made. Resulting data, changed to analog form by output-conversion equipment, actuate controllers to make appropriate process changes.

Since the entire procedure takes only a fraction of a second, unit provides continuous correction for optimum operation. And it can simultaneously print out a permanent record of process data, also monitor instruments for failure and detect dangerous plant conditions.

Computer is built on a modular basis for easy maintenance and reliability. All circuits are mounted on inserts, which are plugged into modules. These, in turn, are plugged into sub-frames interconnected with

cables. Machine action is determined by instructions in its 'memory', which handles several programs.

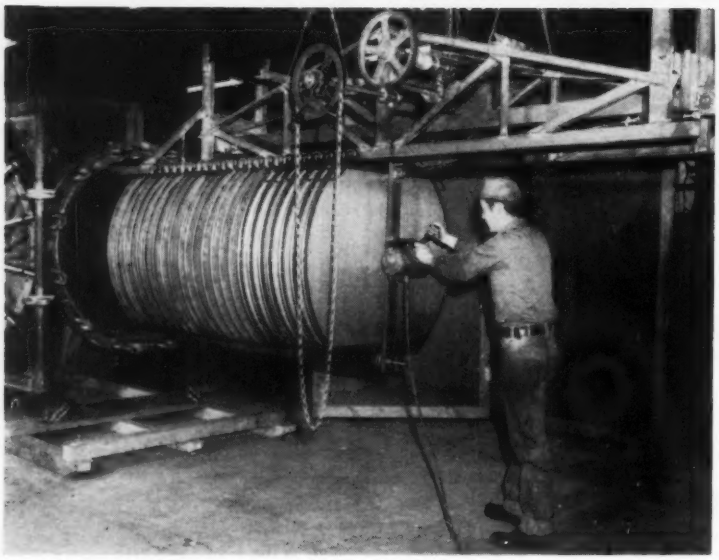
Equipment is 56 in. long, 29 in. wide, 36 in. high. It weighs about 400 lb.—*Ramo-Wooldridge Corp., 5730 Arbor Vitae St., Los Angeles.*

Circle 153A on Reader Service Card

CUT OUT AND FILE

Want More Information?

It's free—and easy to get. Simply note here the items on which you want more details, then circle each key number (there's one given at the bottom of each item) on the handy Reader Service Postcard—back of book. Then sign at the bottom and mail. For your convenience, too, these items are listed and keyed in the Reader Service Section.



Vibration System Cleans Filter Leaves in Seconds

Cleaning time for leaf filters may be cut drastically by use of a new eccentric-type electric vibrator. Installed on filters with capacities of 100-1,000 sq. ft., it is attached to a yoke that transmits vibrations to the leaf-pack tie rods.

In test runs on a filter cake of hydrogenated margarine, all leaves were completely clean after about 10 sec. of vibration. Cake consisted of about 20% nickel catalyst, 55% diatomaceous earth, and 25% residual oil. There were 6 leaves to the bundle, and cake thickness ranged 3/7-½ in. Results were similar when a seventh leaf was added.

Another test on a cake from hydrogenated oil with 140F. melting point showed that 30 sec. of vibration cleaned all leaves.—*Hercules Filter Corp., 175 Ethyl Ave., Hawthorne, N. J.*

Circle 154A on Reader Service Card

Scale Prints, Sends Data; 'Remembers' the Figures

A new 'memory' system and greater recording versatility are advances cited for this weight-printing scale.

Designated Printweight "400", it (1) records weight data in large, clear figures on office forms or tickets up to 8½x11 in., identity including time and date; and (2) transmits data in digital form to remote office equipment, such as adding machines and tabulator tape punches.

Unit's 'memory' permits recording and transmitting even after a load is removed from the platform. Another load can be moved on without affecting stored data. Weights can be identified by selective numbers, available in keyboards with 6-12 banks. And provision can be made for use of up to 10 symbols or names.

High printing speed is achieved by use of a single coding disk. There is no contact between weighing and printing mechanism, except when weight is being recorded.—*Toledo Scale Corp., Toledo, Ohio.*

Circle 154B on Reader Service Card

Electronic Unit Fills Gap In Computer Line

This general-purpose office machine is designed for tasks beyond the capabilities of mechanical calculators, yet not justifying costs of electronic 'brains'. Typical applications include payroll computation, production control, engineering calculations, and cost accounting.

Known as ECS, it fits in a standard office desk, operates from any 110v. outlet, and can be used by relatively untrained personnel. Unit has a standard keyboard and does not require translation of problems into 'machine language'. It incorporates 'memory' and automatic programming for rapid solution of complex repetitive problems. And when not so employed, it can do ordinary arithmetical calculations at high speed.

Automatic programs may be set in the machine manually by means of a program panel, or can be established by a pre-wired plug-in unit. Each program has a 30-step capacity, and the magnetic drum stores constants or results of intermediate operations. A separate control provides memory erasure so that operations not requiring the memory function can be performed without disturbing stored information.

Unit's 14-digit print-out, mounted flush with top of desk, can be set to record all operations or to print only significant answers. When full print-out is used, the tape record provides all data needed to set the plug board for automatic repetition of a manually-executed complex program. Extensive use of transistors and replaceable modules for basic circuits offers high reliability and ease of maintenance. In addition, unit can check itself and diagnose for malfunctions. —*Clary Corp., San Gabriel, Calif.*

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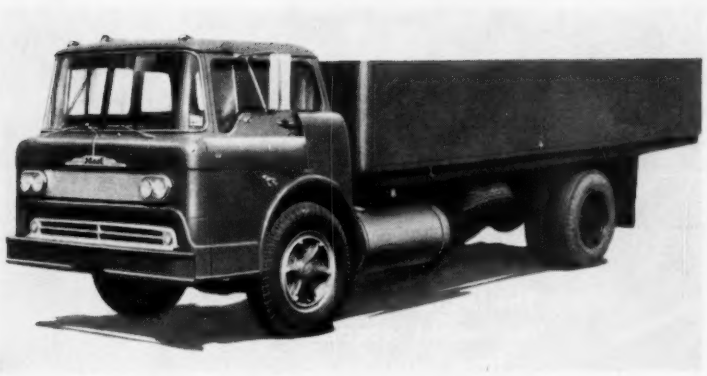

Versatile Cab-Forward Unit Offers Many Advances

Designed for light and heavy hauling in the city or over the road, this new cab-forward truck line stresses operating efficiency, driver safety, and easier servicing. Typical applications include delivery of beverages and dairy products.

Called the N-Group, units have set-back front axles capable of accommodating diesel engines over 200 hp. Models are available either as 4- or 6-wheel trucks or tractors, with gasoline or diesel engines.

Also provided are larger wrap-around windshields for maximum wide-angle vision. Wider doors allow easy entry and exit, also protect steps from snow and ice.

Short wheel base, wide front-axle tread, and widened frame in front, give vehicles shorter turning radius and high maneuverability for city driving and highway runs in congested traffic. Set-back front axle affords ideal load distribution for maximum pay load within legal limits.

To simplify servicing (right photo), a spring-balance arrangement allows entire cab to be tilted forward and returned by a touch of the hand. Safety locks secure the cab in raised and bedded positions.

Vehicles are available in two series, 40 and 60. Former, for lighter hauling, has 28,000-lb. GVW, and a GCW on tractors of 40,000-53,000 lb. Latter series, for heavier work, has maximum GVW of 30,000 lb., and a GCW rating on tractors of 50,000-65,000 lb.—*Mack Trucks, Inc., 1355 W. Front St., Plainfield, N. J.*

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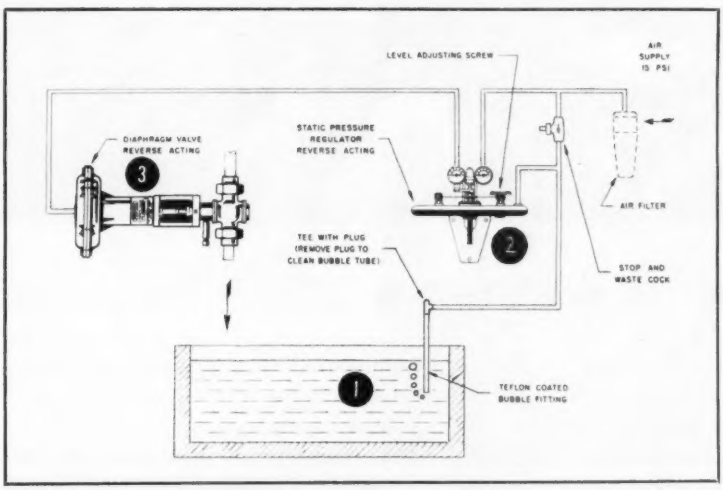

Air-Operated Control Holds Liquid Level Within ¼ In.

New bubbler control system uses Teflon-coated fitting (1) set about 3 in. below liquid surface. Air at 15 psi. (or less) feeds through this line and also to static-pressure regulator (2). Drop in liquid level cuts pressure of liquid on bubbler tip. Transmitted to regulator, this change re-positions diaphram valve (3) on liquid-supply line. Thus, flow of liquid into container is increased until proper level is again reached.—*Power Regulator Co., 3434 Oakton St., Skokie, Ill.*

Circle 155B on Reader Service Card

Many Advantages Reported For New Building Board

This new building board is entirely inorganic, thus resists fire, heat, rot, mold, and vermin. Light weight and strength are cited as additional advantages.

Product (Asbestolux) consists of long-fiber asbestos chemically bonded with silica in a high-pressure steam process. It is also a prime insulating material thermally and electrically, and can be easily sawed, nailed, or fastened with screws.—*North American Asbestos Corp., 141 W. Jackson St., Chicago.*

Circle 155C on Reader Service Card

Ingredients p. 162
Chemicals p. 165
Briefs p. 165
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Which milk product is best for you?

Sweet Dairy Whey

A superior dairy ingredient that improves quality and reduces cost

Lactose

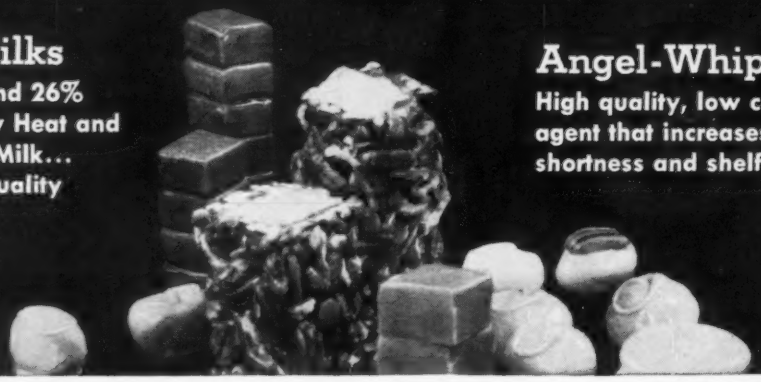
The low-sweetening milk sugar that works wonders in food formulas

Teknikan

The most economical source of that well-known special dairy solids flavor

Powdered Milks

Whole milk (28% and 26% fat), High Heat, Low Heat and Instant Nonfat Dry Milk... all of extra grade quality



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Valley Fresh

Western Condensing Company

Appleton, Wisconsin

WORLD-WIDE SUPPLIER OF HIGH-QUALITY MILK DERIVATIVES

Package Control System Ups Process Efficiency

Remote control of process variables (pressure, flow, liquid level, speed) may now be accomplished by a single packaged unit.

Employing a power supply, positioner, and reducing and booster valves, system (Series 300) permits an operator to set final control elements such as valves, throttles, and rheostats. Compact controller receives its signals from a remote supervisory unit by telegraph, telephone or private wire, or microwave transmission.—*A. W. Cash Co., P. O. Box 551, Decatur, Ill.*

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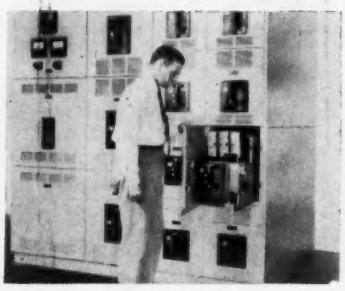

New Circuit-Breaker Line Offers Many Advantages

Advanced engineering of these new low-voltage power circuit breakers and of the switchgear using them offers improved performance, parts standardization, and simplified servicing. New line comprises three frame-size ratings: 225, 600, and 1,600 amp. continuous, at 600v. a.c. Advances include manual quick-make, closed-door drawout to test and disconnect positions, and sub-assembly construction of breakers.—*I-T-E Circuit Breaker Co., 19th & Hamiliton, Phila.*

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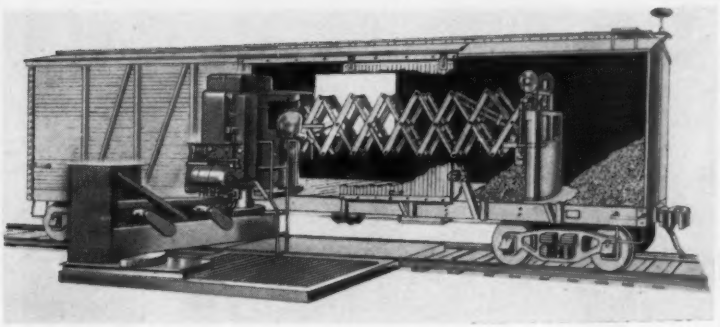


Hydraulic Boom and Scoop Speeds Box-Car Unloading

Fast and economical unloading of box cars is reported with use of this hydraulically-operated unit.

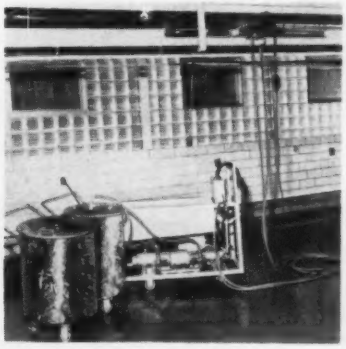
Known as S-A, it handles granular, pulverized, or any free-flowing material in about 30 min. per car. Unloading is a one-man operation. Boom swivel and scoop actions are hydraulically actuated and can be operated automatically during much of the unloading cycle. Thus, operator is periodically free to dispose of grain doors, prepare other cars for unloading, or ready a car puller to remove unloaded car.

Design flexibility permits unloading on a single or double parallel track. And with operator on a platform outside the car, danger of dust exposure and accident is eliminated.

In operation, boom and scoop are swung into loaded car. When set in motion, scoop is in a raised position. Boom extends until scoop meets resistance of material or car wall, which causes scoop to dig down. Next, boom retracts and pulls loaded scoop to open car door for discharge. Then, scoop rises and boom extends to repeat the cycle.

Although unloading is fully automatic, operator can stop the cycle at any time to re-direct the boom or to withdraw the scoop. When unloader is in 'out-of-service' position, there is adequate allowance for standard rail clearance. And unit's foundation will not interfere with a track hopper or conveyor pit.—*Stephens-Adamson Mfg. Co., Aurora, Ill.*

Circle 157C on Reader Service Card



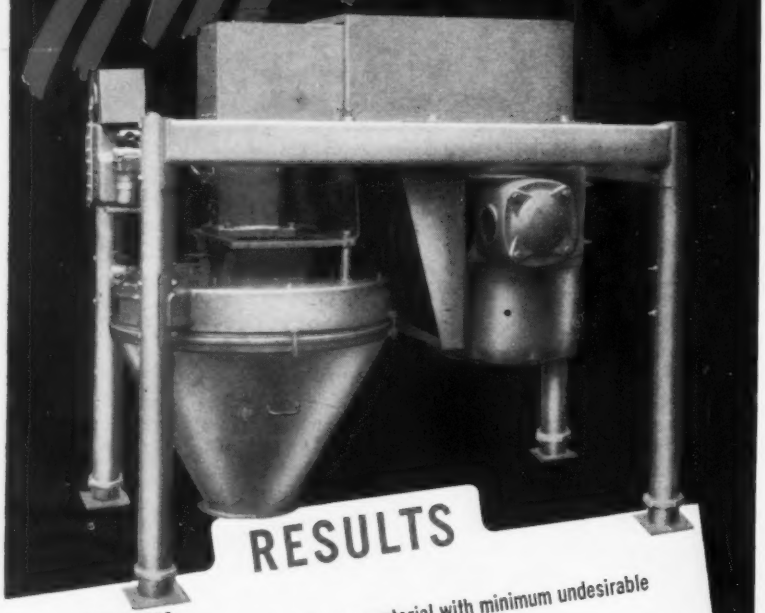
Portable Rig Automates Washing of Conveyors

Operated by one man, this portable washer is designed to speed and simplify cleaning of wire-belt conveyors up to 24 in. wide.

In a regular cleaning schedule, 3-4 passes of a conveyor section through the unit clean a belt carrying any product except icings. Time required for latter cleaning varies with type of icing.

As shown in left photo, basic parts of machine (Conveyor Washer) are pumping unit, wash and rinse tanks, aluminum washing head, and drip

PARTICLE SIZE REDUCTION by IMPACT



RESULTS

PROBLEM:
To reduce particle size of the dry material with minimum undesirable fines . . . to reject soft, high moisture material.

MATERIAL:
Edible Gelatin.

SOLUTION:
Installed an ENTOLETER® CentriMil . . . Series 27.

EVALUATION:
1. Uniformity of Particle Size.
2. Reduction of Dust and Undesirable Fines.
3. Low Heat Rise.
4. Low Horsepower and Space Requirements.
5. Selective Grinding . . . Permitting the Removal of Unchanged, High Moisture Material.

You may have a similar problem . . . or a completely different one. In either case, let us help you solve it . . . at lowest cost . . . with best results.

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pan. Connecting hoses, cords, drip pan, washing head, and motor fit into pumping unit for easy transportation.

Washing head has four rotary brushes driven by ½-hp. motor. They rotate on each side of conveyor belt in a bath of washing solution. Drip pan has stationary brushes that remove droplets from belt as it comes out of washing head, high solution temperature permitting rapid evaporation. Pumping unit has double-ended motor with a pump mounted at each end, recirculating between tank and washing head.

Jacketed heater unit (6,000w.) operates on 220v. or 440v., 3 phase, 60 cycles. Its thermostat cuts out at 200 F. A pressure gage and thermometer check machine performance.

Quickly removable tank covers speed emptying and facilitate cleaning. Washing head can readily be carried up a ladder for ease of installation. Right photo shows unit assembled and attached to a 24-in. belt conveyor, ready for use.—*Union Steel Products Co., Albion, Mich.*

Circle 157D on Reader Service Card

Loop Design Ups Sensitivity Of New Metal Detector

Automatic balance control of this electronic metal detector offers high circuit stability, which eliminates need for constant observation and frequent adjustment.

Called "Twin Loop," unit can be installed on any conveyor handling non-magnetic materials. Its sensitive loops detect tiny metal particles at conveyor speeds of 30-600 fpm. Control circuits can be set to trigger a warning light or other signal, or to

Jamison announces flexidor*...

NEW flexible batten door

All-neoprene batten door designed for use with power trucks

* Jamison Trademark

Flexidor is light and resilient to absorb and dissipate the shock of impact; reinforced door noses add strength, prevent buckling or wrap around on impact. Free-swinging door suspension provides minimum impact resistance. Jamison two-way gravity cam hinges assure fast closing.

Flexidor is available in a full range of sizes for use in new construction or to replace rigid battens. Complete information is available from the Jamison Cold Storage Door Co., Hagerstown, Md.

More JAMISON Doors are used by *more* people than any other Cold Storage Door in the world.

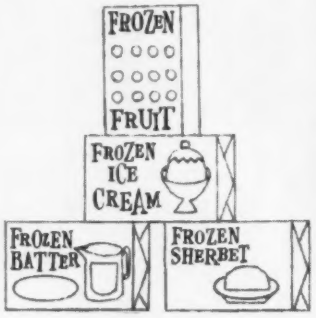
JAMISON

COLD STORAGE DOORS

For more data, circle this page number on card at back →

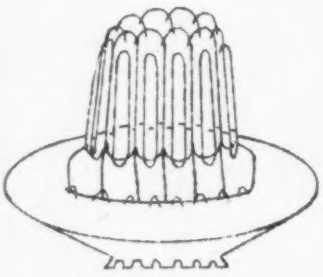
Which of these algin uses best solves your processing problems?

Thickening



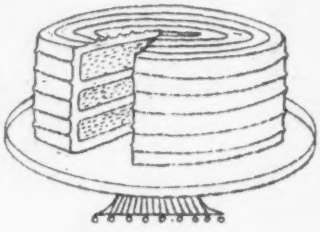
Stabilizing

Suspending



Gelling

Emulsifying



Coatings and Icings

Unique and effective hydrophilic colloids, Kelco Algin products speed production and cut costs. Further, they improve your product's eye and taste appeal. They provide proper body and texture, reduce settling or separation, retain moisture in place.

Easy to use and readily soluble in hot or cold water, Kelco Algin products are providing the answer to diverse processing and production problems in many fields. If you have a problem in thickening, stabilizing, emulsifying or gelling, please contact us. The Kelco Company's technical staff is at your service, ready to recommend the right algin to solve your specific problem. Call or write your nearest Kelco regional office.

Kelco Company

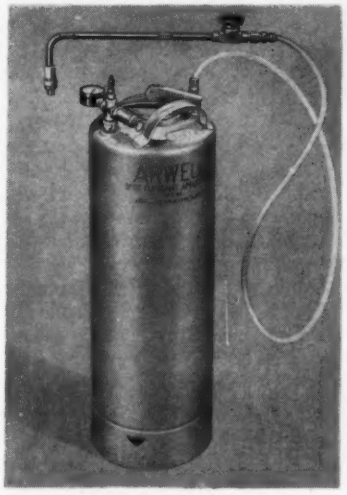
120 Broadway, New York 5, N. Y. 20 N. Wacker Dr., Chicago 6, Ill. 530 W. 6 St., Los Angeles 14, Cal. Cable Add.: Kelcoalgin — N. Y.

actuate a reject mechanism that diverts contaminated products.

Control cabinet (not shown) weighs 75 lb., measures 19x25x11 in. Main fuse, controls, manual reset button, and indicator lights are on front panel. Locking door prevents tampering.

Coils are available in standard 48-in.-circular, or 10x33 in. rectangular models. Special sizes and shapes can be designed for any installation.—*Stearns Magnet Products, 635 S. 28th St., Milwaukee.*

Circle 158A on Reader Service Card



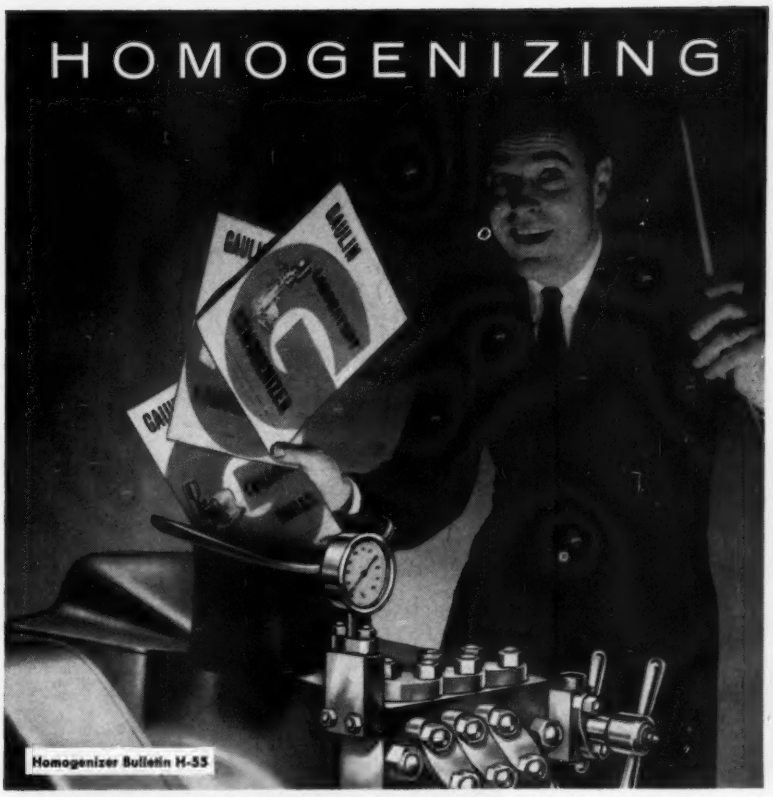
Potent Fumigator Provides Low-Cost Insect Control

Wide food-industry use is seen for a new portable device designed to cut labor and fumigant costs, while providing faster insect kill with utmost safety to operators.

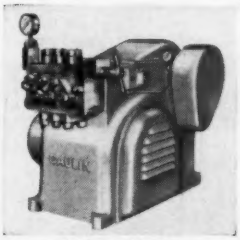
Called Spot Fumigant Applicator, it employs any gasifying agent and is termed particularly effective in preventing insect infestation in enclosed conveyors. Fumigant is applied as a finely atomized mist that vaporizes almost immediately, thereby affording fast penetration of cracks, crevices, and seams of flour, grain, and ingredient-handling conveyors.

Unit employs a 5-gal. stainless-steel tank and stainless braided discharge hose, vinyl-lined and covered for corrosion resistance. With 35-50 psi. air pressure in tank, about 1 oz. of fumigant is discharged every 6 sec.—*Arwell, Inc., 1119 Glen Rock Ave., Waukegan, Ill.*

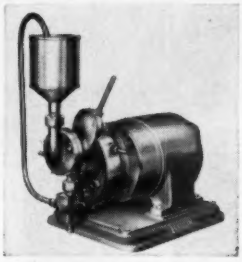
Circle 161A on Reader Service Card



FREE. *Send for the G.T.A. Library of Product Information* G.T.A. . . . Means Gaulin Technical Assistance — best source on how to mix or move your product.



Sub-Micron Disperser Bulletin SMD-55



Colloid Mill Bulletin C-57

Laboratory Homogenizer Bulletin LH-55

New Tricks for old blends with Gaulin "PARTICLE CONTROL"

Get the jump on costs and quality! See what a Gaulin Homogenizer or Colloid Mill can do for you . . .

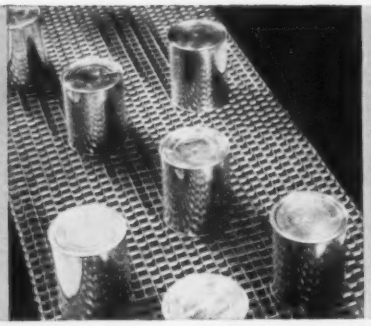
- Pharmaceuticals: more uniform, stable and finer emulsions.
- Grease: increases penetration value and uniformity.
- Cosmetics: produces smoother textures, longer shelf-life, locks-in fragrance.
- Wax Emulsions: less emulsifying agent required, increases stability.
- Pigments: produces continuous, high capacity dispersions to finest possible particle size.

Try Homogenizing your product. Send a sample or rent Laboratory Homogenizer for only $75.00 a month. Gaulin Technical Assistance will help you bring new cost-saving solutions to processing operations.

Gaulin TRADE MARK
MANTON Gaulin MANUFACTURING CO. INC. EVERETT, MASS.

73 Garden Street, Everett 49, Mass.
World's largest manufacturer of stainless steel reciprocating, rotary, pressure exchange pumps, dispersers, homogenizers and colloid mills

Best Known FOODS are processed on



LA PORTE FLEXIBLE STEEL CONVEYOR BELTING

because *this endless belt, that gives endless service,* protects product flavor and uniformity in Canning, Freezing, Pickling and Dehydrating. Besides, the OPEN MESH feature facilitates sterilizing with steam gun or scalding water, provides for fast drainage as well as circulation of air, liquids, heat and cold around products in process. Cuts costs in packaging and shipping, too.

Made from Galvanized Strip Steel ⅜" by .047, assembled with Galvanized Cross wire. Available in 3 standard open mesh sizes: ½" x ½", ½" x 1", 1" x 1", in any length and practically any width. (Stock widths 12", 18", 24", 30".)

LA PORTE

Ask your Mill Supplier or write for illustrated literature, prices.

MAT AND MFG. CO.

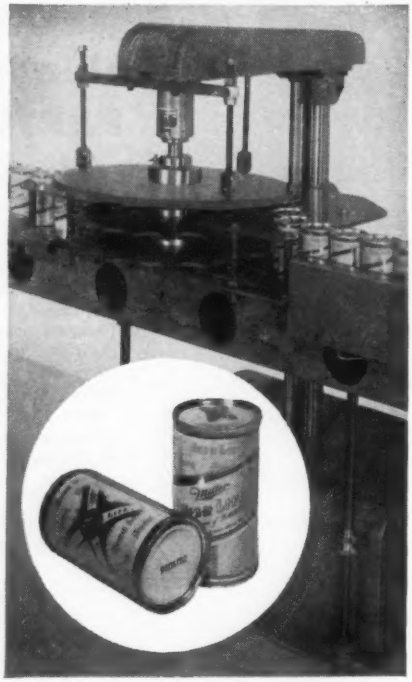
BOX 124 *La Porte, Indiana*

New way to Code Cans, Jars, Bottles

Compact, portable attachment adapts to any line

The Gottscho "Model TB" MARKOCODER® machine is a unique, fully automatic, packaging line attachment for coding bottoms of cans, jars, bottles, canisters, paper containers at speeds up to 600 per minute. Makes consistently clean, permanent ink imprints. Designed for quick code changes, simple maintenance, easy adjustment for different size cans. Offers all the advantages of a fixed-installation imprinter without requiring alteration of present line set-up.

See it at Booth 118-217, PM & ME, Atlantic City, March 25-28 . . . or write



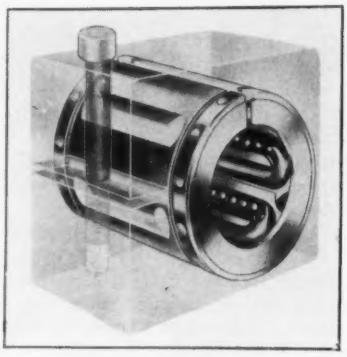
Gottscho ADOLPH GOTTSCHO, INC.

Dept. G, Hillside 5, N. J.

In Canada: RICHARDSON AGENCIES, LTD., Toronto & Montreal

Automatic Production-Line CODING, MARKING, IMPRINTING MACHINES

Equipment & Supplies



Unique Split Ball Bearing Offers Flexible Operation

This new type of ball bearing, split longitudinally as illustrated, is designed for line-to-line or slight preload fits when mounted in an adjustable diameter housing.

Known as Adjustable Diameter Ball Bushings, these bearings provide free-running, no-play linear motion because tolerance on both shaft diameter and bearing bore can be adjusted. In addition, this design enables compensation for any wear.

Units are available in standard size for shafts ranging 1-4 in. dia.—*Thomson Industries, Inc., Manhasset, N. Y.*

Circle 162A on Reader Service Card

INGREDIENTS

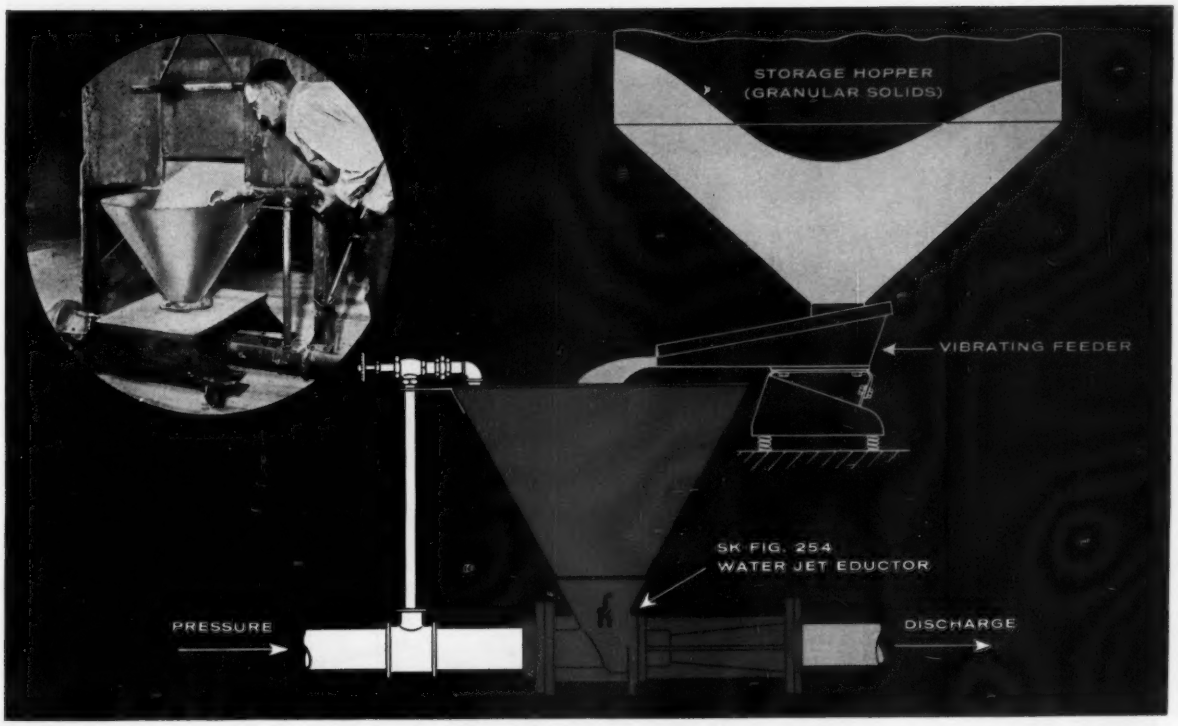
Spray-Drying Ups Stability Of Garlic, Onion Products

New spray-dried onion and garlic powders reportedly are equal in flavor strength to former dehydrated products, but are far more stable.

Typical applications: Sauces, dry soups, canned meats, sausage, pickles, catsup, salad dressings, and specialties. Known as Dolcoseal Onion and Garlic, respectively, they are relatively non-hygroscopic. Resulting solutions are clear and have excellent storage stability.

In use, 1 lb. of spray-dried product replaces 1 lb. of dehydrate. In formulas using natural ingredients, 1 lb. of spray-dried onion equals 10 lb. of peeled, trimmed onions, and 1 lb. of the garlic replaces 5 lb. of peeled, trimmed garlic buds.—*Dodge & Olcott, Inc., 180 Varick St., New York City.*

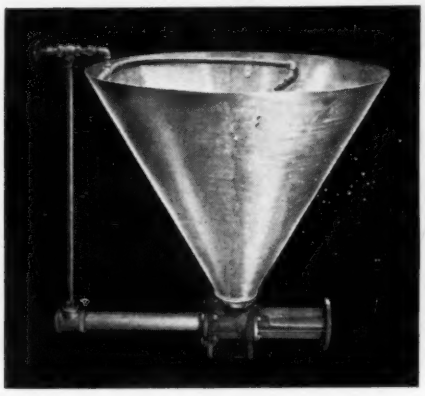
Circle 162B on Reader Service Card



MIX SOLIDS WITH LIQUID, CONVEY SLURRIES

with this SK "Hopper Type" Water Jet Eductor

SK Fig. 254 Hopper Type Water Jet Eductor



SK's Hopper Type Eductor, shown above and at left, will mix solids with liquid and convey slurries conveniently and at low cost. See box below for types of granular solids currently being handled.

An inexpensive unit, this light-weight eductor is easy to install, simple in construction with no moving parts, requires little maintenance, and provides efficient service over long periods. In operation, pressure water, issuing through the nozzle, entrains granular solids from the hopper and discharges through discharge piping. Agitating jets keep material moving down into the eductor.

Used in the petroleum industry, in chemical processing and food processing plants, the hopper eductor has proved to be extremely satisfactory in handling the materials (bulk densities noted) listed below and others.

For full details on Hopper Type Eductors including sizes, capacities, ratios, water consumption, materials of construction, write to SK for Bulletin 2M.

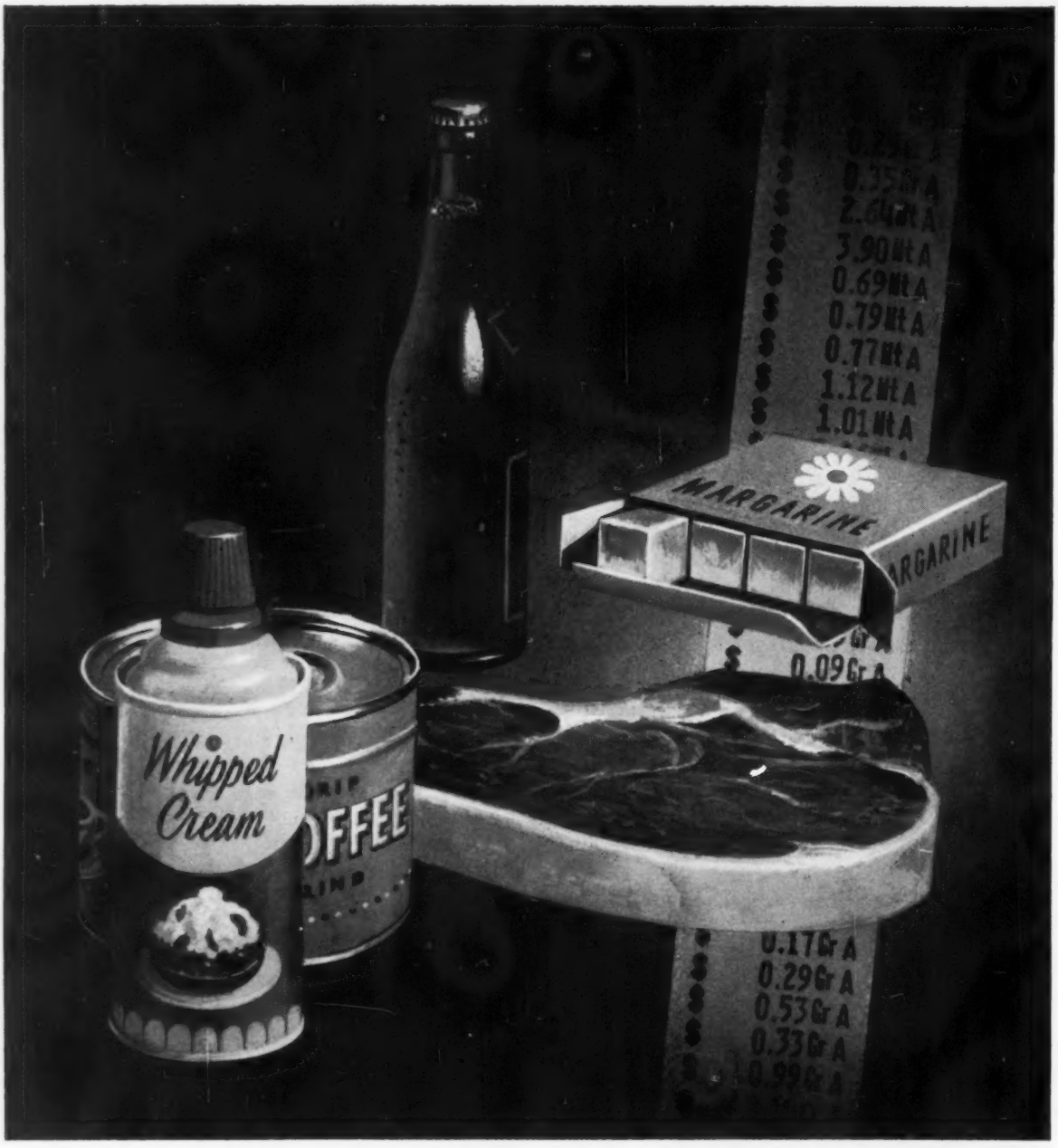
SK HOPPER EDUCTORS ARE BEING USED CURRENTLY TO HANDLE THE FOLLOWING MATERIALS *(Approx. Bulk Densities Indicated in Parentheses)*

Borax (50-55)
Charcoal (18-28)
Diatomaceous Earth (10-20)
Lime, Pebble (56)
Lime, Powdered (32-40)
Mash (60-65)
Fly Ash (35-40)
Rosin (67)
Salt, Granulated (45-51)
Salt, Rock (70-80)
Sand, Damp (75-85)
Sand, Dry (90-100)
Sawdust, Dry (13)
Soda Ash, Light (20-35)
Sodium Nitrate, Dry (80)
Sulphur, Powdered (50-60)
Wheat (48)
Zinc Oxide, Powder, Dry (10-35)

JET APPARATUS: Ask for Condensed Bulletin J-1.
ROTAMETERS & FLOW INDICATORS: Ask for Condensed Bulletin M-1.
VALVES: Ask for Condensed Bulletin V-1.
HEAT TRANSFER APPARATUS: Ask for Condensed Bulletin HT-1.
GEAR PUMPS: Ask for Bulletin 17-A.

Schutte and Koerting
COMPANY
MANUFACTURING ENGINEERS SINCE 1876
2223 State Road, Cornwells Heights, Bucks County, Pa.

For more data, circle this page number on card at back →



Air Reduction gases help bring food to market

The increased use of gases in food processing is an important development in the food industry.

Air Reduction produces all the major gases used for food products—nitrogen, hydrogen, argon, nitrous oxide, and carbon dioxide. They can be supplied in the quantity and quality you need.

Technical representatives are ready to study your problem and offer their help toward practical solutions. Simply call your nearest Air Reduction office.

FOR YOUR USE: We've prepared a 24-page summary of the gases used in the food industry. For your free copy of "Facts on Gases Used for Food Products," write: Air Reduction Company, 150 East 42nd Street, N. Y. C.

AIR REDUCTION COMPANY, INCORPORATED

AIRCO HYDROGEN, NITROGEN, ARGON AND OTHER GASES • OHIO NITROUS OXIDE • PURECO CARBON DIOXIDE

CHEMICALS

Floor Topping Resists Chemical Corrosion

Chemical destruction of industrial floors, entailing expensive replacements and lost production, may be curbed by an easily applied topping.

Known as Chemfast Concrete, it consists of special epoxy resin binder and aggregates. Applied over a Portland-cement concrete base, product guards against nearly every commercial chemical, also has high structural strength.—*Truscon Laboratories, Caniff & Dyar Sts., Detroit.*

Circle 165A on Reader Service Card

BRIEFS

New UHT System improves shelf life and flavor of dairy products such as milk, cream, and ice-cream mix. Sanitary heater employed is a high-velociy, steam-injection unit requiring only 'pipeline' space. It is designed for operation (at 210-240 F.) with maker's vacuum deodorizer.—*Cherry-Burrell Corp., 427 W. Randolph St., Chicago.* (165B)

High-Speed Dough Mixer employs 3-bar agitator for maximum gluten development. Unit (Super D) has compressed-air seals, sanitary water inlet, and quick-operating flour valves suitable for sliding-sleeve hopper or pneumatic system. Capacities: 800, 1,000, 1,300, and 1,600 lb. of dough.—*Capital Products Corp., Read Standard Div., York, Pa.* (165C)

Hoist Trolley, powered by air motor, enables one man to raise, lower, or move loads up to 2 tons at 70 fpm. Exerting 250-lb. drawbar pull, device (Hoistractor) operates at speeds from a slow creep to 150 fpm. It can also be used to power a traveling bridge crane.—*Gardner-Denver Co., Quincy, Ill.* (165D)

Compact Peanut Cooler, handling up to 2,000 lb. per hr., takes only 2x7½ ft. of floor space. Automatic batch-type unit (No. 334-C) requires no openings or rails in floor, eliminates smoke and heavy manual labor. Interior and conveyor buckets can be plastic-coated for easier sanitation.—*Bauer Bros. Co., 1740 Sheridan Ave., Springfield, Ohio.* (165E)

Electronically Perforates

pickles and other food products

Operation: cucumbers are deposited in hopper and lifted on ladder-type conveyor to top of machine. Then gravity-tumbled through heavy plexiglas-covered raceway under electronic perforators and into take-away conveyor or tank.

An Electronic Pickle Perforator, another new development by Standard Metal Products Co., leading manufacturer of custom food processing equipment.

Hundreds of microscopic electronic piercings penetrate deep into the cucumbers, letting out damaging gases to reduce costly "bloaters" . . . letting in sweetening juices to cut curing time from weeks to days.

High Speed—handles 6 to 10 bushels per minute, depending on pickle size.

Contamination-resistant—microscopic perforation eliminates danger of foreign matter contaminating cell structure during perforating . . . prevents breaking down of cell structure during sweetening.

Reduces shriveling—electronic perforations speed curing, yet reduce shriveling, whether cured in tank, barrel or bottle.

Low Maintenance—all stainless steel construction.

Adjustable: electrodes can be adjusted to permit effective perforating of large or small cucumbers or other cured products.

Completely portable: moves on heavy duty casters. Operates on 110 volts.

STANDARD METAL PRODUCTS

STANDARD METAL PRODUCTS CO., 123 N. RACINE AVENUE, CHICAGO 7, ILLINOIS

GENTLEMEN: We are interested in your recommendations in regard to the food processing equipment checked, or described in letter attached:

☐ coolers ☐ exhausters ☐ pasteurizers ☐ accumulating tables

☐ can washers ☐ case-sealers ☐ electronic pickle-perforators

Company_____

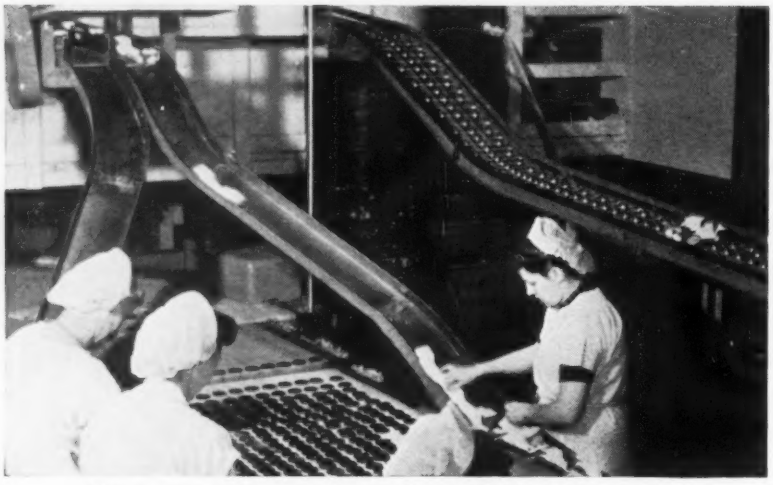
By_____ Title_____

Address_____

City_____ Zone_____ State_____

For more data, circle this page number on card at back →

Ask Standard how to cut costs with conveyors



Chutes carry empty trays from makeup machine to packing belts alongside the cookie enrobing line.

Trays are filled with cookies as they move past operators to automatic wrapping and packaging.

Floor-to-floor conveyors save manhours, space, handling

for famous biscuit and cookie maker

A VARIETY of conveyor equipment makes this system a model of simplicity, efficiency, economy.

It's another example how Standard's experience in conveyor application pays off. At Robert A. Johnston Company, Milwaukee, Wisconsin, Standard Conveyors pay for themselves in manhour savings . . . eliminate most hand trucking . . . cut floor area needed for handling by two-thirds.

STANDARD CONVEYOR COMPANY, General Office: North St. Paul 9 Minn. Sales and Service in Principal Cities. *Canada*: International Equipment Co., Ltd.

Left: 3-tier power and gravity system carries cases to warehouse. Tape-sealing and coding of cases are done on roller conveyor lines. Right: Multiple spiral chutes lower cased goods from 4th to 1st floor. Speed is controlled by pitch design.

Sales and Service in Principal Cities.

For details, see the Standard Engineer listed in the phone book or write for Bulletin 309. Address Dept. D-3.

Equipment & Supplies

Vacuum Loader automatically feeds machine hoppers up to 30 ft. high, eliminating need for lift trucks and dumpers. Available in stainless steel, unit (Rainco) handles granules and fine powders at up to 1,200 lb. per hr.—*Rainville Co., 224 7th St., Garden City, N. Y.* (166A)

Concentrated Emulsifier for sponge and regular cakes containing shortening speeds and simplifies mixing. Product (Brem) imparts fine texture, excellent eating quality, and improved moisture retention. It is available in 35 lb. pails and 400-lb. drums. —*American Breddo Corp., 601 W. 26th St., New York City.* (166B)

Vapor-Pressure Deodorizer can be installed in any HTST or UHT system continuously processing 8,000-30,000 lb. per hr. Of stainless steel, machine (Deoderator) removes air and undesirable flavors from milk products. Floor space required: 28x28 in.; height, 4½ ft.; water connection, ¾-in. IPS.—*Chicago Stainless Equipment Corp., 5001 N. Elston Ave., Chicago.* (166C)

Circle Key Numbers on Reader Service Card

EQUIPMENT APPLICATIONS

Taping Perfects Palletizing Of Uncased Bright Cans

Secured by pressure-sensitive tape, pallet loads of bright cans are now shifted about without damage at Tri-Valley Packing Co.'s northern California canneries.

Palletizing of cans eliminates multiple handling and prevents damage to cartons. Rather than pack unlabeled cans in cartons from which they would have to be removed for

More Food Processors everywhere are using Morton '999' Salt

Food processors, canners and packers from coast to coast are finding that the quality of Morton '999' Salt is the standard of the food industry. They've discovered that '999' insures better, more uniform flavor in processed foods. And no wonder! Morton '999' is a low-price, premium-grade salt entirely free from bitter calcium and magnesium compounds that can distort flavor.

Morton '999' is always 99.9% clean, pure sodium chloride, exceptionally low in the trace metals copper and iron.

You can count on '999' quality—every time

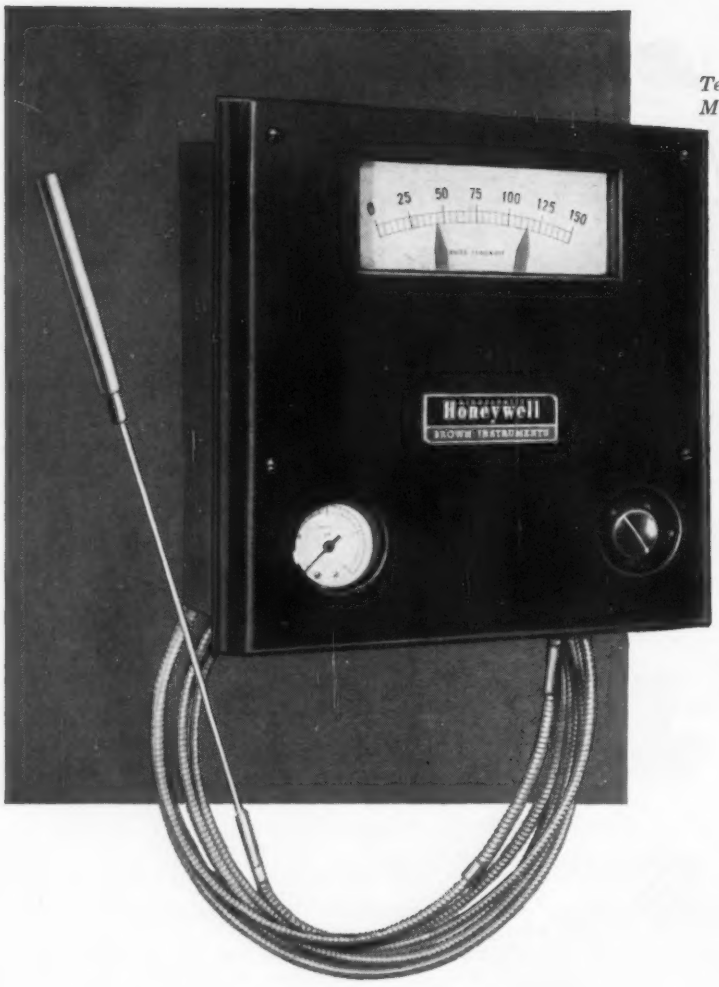
Morton '999' is the highest purity salt commercially available in all 48 states. '999' quality never varies from shipment to shipment, whether you buy it in bulk for direct salting or brine, or in handy tablets made to your own specifications.

Send for complete information today

Regardless of your size or location, Morton offers the salt and service you need to help you do a better job. For information about Morton '999' Salt and the technical services Morton offers the Food Industry, write:

MORTON SALT COMPANY
INDUSTRIAL DIVISION
Dept. FE-3, 120 So. LaSalle Street, Chicago 3, Illinois

For more data, circle this page number on card at back →



Temperature Controller
Model 604P5

HONEYWELL TEMPERATURE CONTROLLER

simply designed, moderately priced

Here's a simplified temperature controller that may be exactly what you need for automatic control . . . at moderate cost.

This indicating pneumatic temperature controller uses many of the same high-quality components usually found only in larger, more expensive instruments. Design simplification—not corner-cutting—makes possible its reasonable price.

The controller requires less than one square foot of panel space. It has just one control knob and two air connections . . . is extremely simple to operate. Available in temperature ranges from –40 to 1000 F. Pneumatic on-off or 10% *Throttlor* control.

Your nearby Honeywell sales engineer can help you profitably apply this and other Brown Instruments. Call him today . . . he's as near as your phone.

MINNEAPOLIS-HONEYWELL REGULATOR CO., *Industrial Products Group*, Brown Instruments, Wayne and Windrim Avenues, Philadelphia 44, Pa.

● **REFERENCE DATA:** Write for Catalog C $\frac{600}{700}$1.

Honeywell

First in Controls

labeling, cans are stacked on pallets with only a piece of cardboard between layers.

Taping only the two top tiers of cans on each pallet holds the remainder of the load in place. When cans are to be labeled, stackers use a stick to peel the tape off without dislodging them.

Tape employed is a flatback paper type (No. 161, Behr-Manning Co., Troy, N. Y.) with rubber-base adhesive. It has tensile strength of 45 lb. per in. of width, 3-4% elongation, and adhesion of 65 oz. per in. of width.

Circle 166D on Reader Service Card

Air-Conveying of Sugar Cuts Operating Costs

Pneumatic handling of bulk sugar enables four important economies at Louis Sherry Preserves, Inc., Long Island City, N. Y. In addition to eliminating former manual bag handling and resulting breakage losses, it saves sanitation labor and floor space.

Sugar is received from a specially constructed pneumatic-unloading trailer (FE Aug. '57, p. 59), and sent to roof-top storage. This delivery method alone saves 25¢ per 100 lb.

To feed cooking kettles, sugar is moved across the roof and down the side of the building by air-conveyor (Albert Air Conveyor Corp., 600 16th St., Oakland, Calif.) Sugar is blown through 2½-in. aluminum pipe right into automatic weight hoppers. Operator then merely opens a valve to drop the required amount into a kettle.

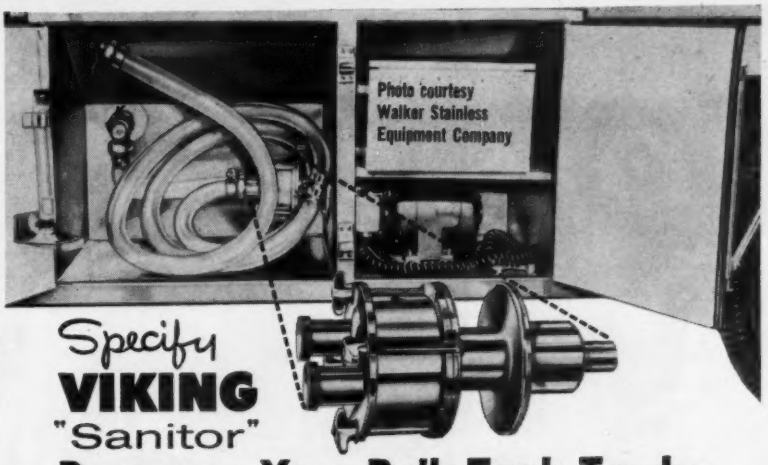
Circle 169A on Reader Service Card

Mid-Speed Multipacking For Medium-Size Plant

Loading cans into 6-pack cartons at 300-600 per min., a recently introduced unit now enables the medium-size cannery and brewery to take full advantage of multiple packaging. Latter offers increased sales through superior brand identification and billboard-like advertising.

Gertz Brewing Co., Philadelphia, is the first user of the unit (CB-VI, Container Corp. of America, 38 S. Dearborn St., Chicago) It can be adjusted for various can heights, also handles soups, fruits, vegetables, and soft drinks.

Circle 169B on Reader Service Card



Specify
VIKING
"Sanitor"
Pumps on Your Bulk Tank Trucks

Because . . . the new Viking 7171A "Sanitor" is easiest to mount, assemble, disassemble, clean. No need to return pump to factory for repairs. Turn only 2 hand wheels to remove from mounting bracket. Turn only 2 more to completely disassemble pump. No splines or threads in pumping zone to clean. No large and deep O-ring grooves to clean. Positive, slow speed, fast delivery assured.

Send today for folder Sp 456E

VIKING PUMP COMPANY
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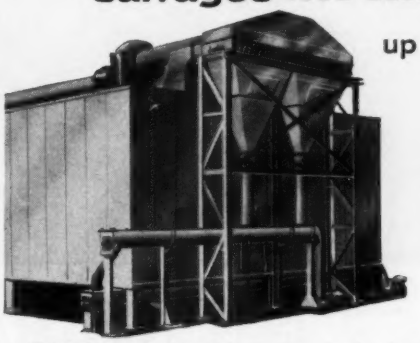

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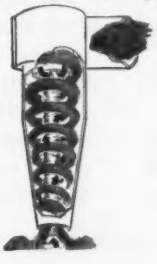

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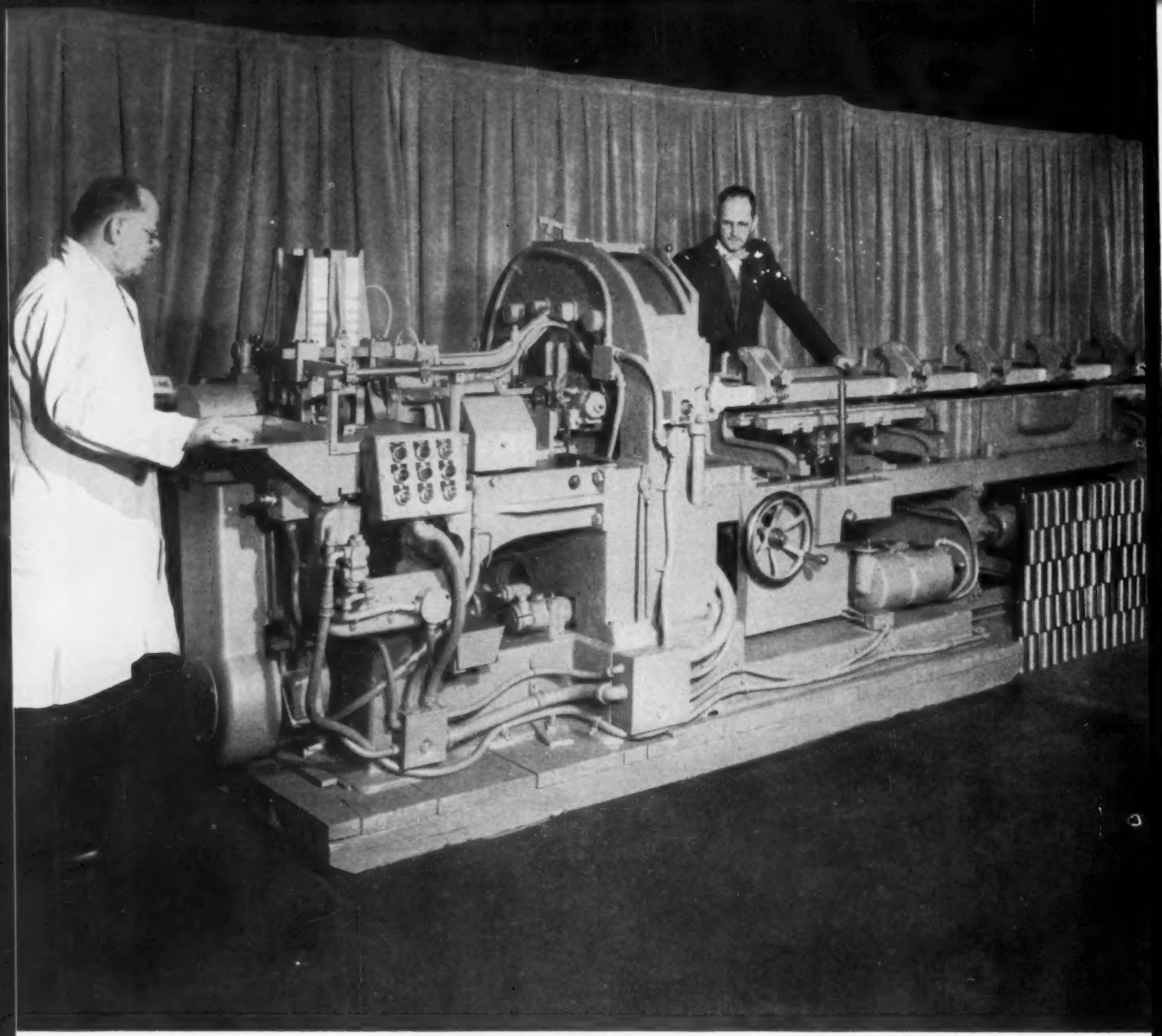

Packers and can manufacturing experts at the recent Annual Canners Convention at Atlantic City watched this Hamilton #502 Bodymaker turn out can bodies at the rate of more than 500 per minute.

HAMILTON'S NEW 502 BODYMAKER... latest in speed and efficiency

Hamilton's new high-speed bodymaker now features further improvements, designed to increase accessibility and reduce maintenance costs.

A new flexer, consisting of two staggered rolls canted at 35°, delivers the tinplate to the bodymaker properly flexed to produce a perfectly round can. The rolls are readily adjustable to the size of can being processed. All stations on the Hamilton #502 Bodymaker are driven from a central crankshaft mounted in precision bearings. Downtime is reduced to an absolute minimum, production speed has been stepped up to more than 500 cans per minute.

The Hamilton #502 Bodymaker is the newest unit among many fine Hamilton can making machines comprising the world's most complete line. Write today for details.

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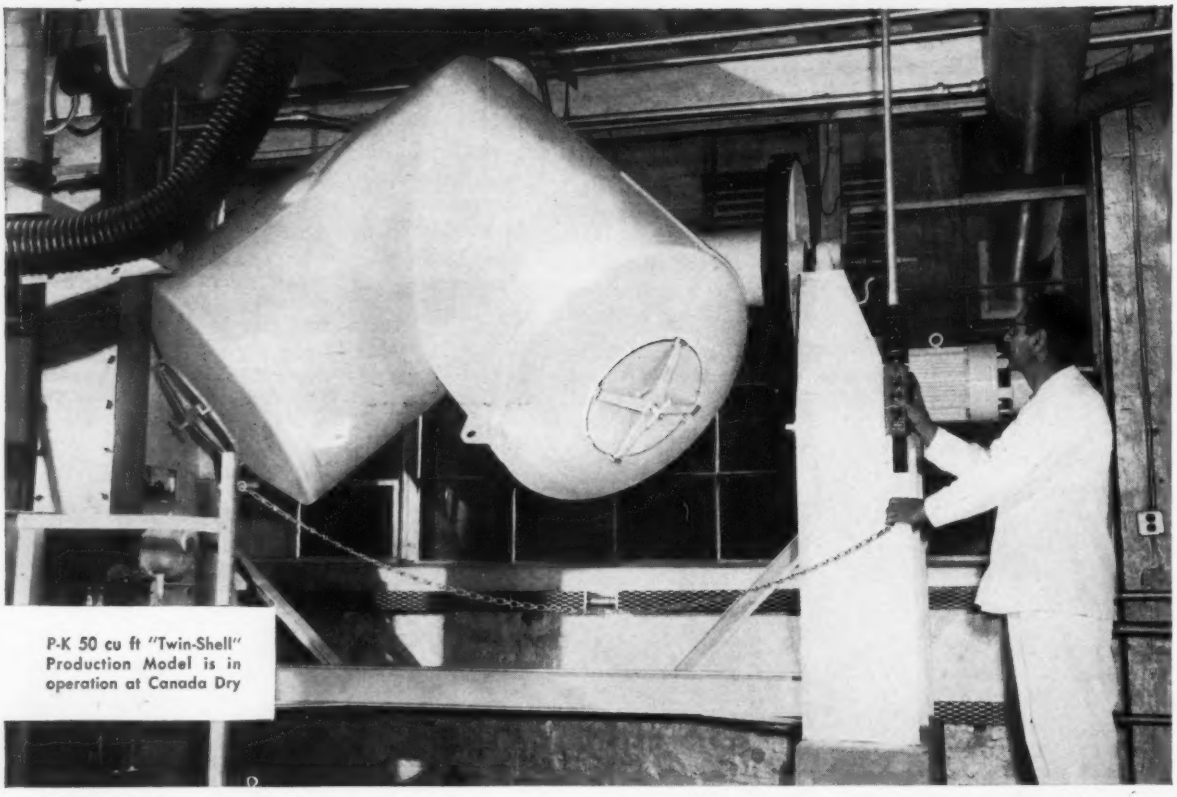

P-K 50 cu ft "Twin-Shell" Production Model is in operation at Canada Dry

Blending efficiency of P-K "Twin-Shell" Blender proven with Pre-Test by Canada Dry

Before buying a blender to produce large batches of dry sparkling water solids, quickly and uniformly, The Canada Dry Ginger Ale Co., Inc. arranged to pre-test the beverage powders in a P-K "Twin-Shell" lab blender. On the basis of the pretest results, Canada Dry ordered a 50 cu. ft. stainless steel "Twin-Shell" production blender with the specification that blending performance must be as good as that of the lab unit. (Scale-ups from lab tests are always equalled or bettered in P-K production models.)

Canada Dry now blends 1800 lb batches of dry sparkling solids in 20 minutes. This batch is approximately 12 times the batch size achieved formerly. The much larger batch allows Canada Dry to utilize available manpower elsewhere in the plant for most of the day's processing, since one 20-minute batch is sufficient for more than a day's requirements.

Because of the alkaline nature of the ingredients stainless steel was specified throughout. Cleaning is simple. The unit is cleaned with water at 200F.

Test *your* formulas free at P-K's Customer Service Lab

Leading companies in virtually all the chemical and food industries have found that P-K "Twin-Shell" blenders have met their blending requirements better . . . faster . . . and more economically than conventional mixer-blenders.

P-K can help you to determine accurately the right type of "Twin-Shell" blender for your needs. Complete lab facilities are available for blending materials from 4 qts to 3 cubic feet (working capacities)—comparison tests can be made on the spot. You and your staff can conduct your own blending studies . . . or you can utilize P-K's qualified blender technicians to assist you in product research. This service is available without obligation because P-K recognizes that more and more companies realize the importance of pretesting before purchase—they realize too, the need to keep their present blending methods up-to-date. If it is impossible for you to conduct these tests personally, arrangements can be made for you to send us your formulations for testing. In either case, contact Russell Dotter at P-K.

For technical data on P-K "Twin-Shell" blenders for production or laboratory use, write for bulletins 15a-1 (lab) or 15 (production). The Patterson-Kelley Co., Inc., 203 Hanson Street, East Stroudsburg, Pa. Phone: 820.

All P-K "Twin-Shell" Blenders are patented and the name registered.

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Chemical and Process Division

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Dust Collectors

Fact sheet on wet-type dust collectors. Bul. WDC, 2p.—*North American Mogul Prod. Co., Cleveland. (173B)*

Condensers

Describes low-level condensers for steam, under vacuum, at ground level. Bul. 5AB, 8p.—*Schutte and Koerting Co., Cornwells Heights, Pa. (173C)*

Settling Tanks

Describes improved settling tank design for removal of solids from water, sewage and industrial wastes. Folder 2648, 8p.—*Link Belt Co., Chicago. (173D)*

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Detailed information on construction features of 150-1250 hp. induction motors. Contains cutaway drawings and illustrations. Bul. 1950, 16p.—*The Louis Allis Co., Milwaukee, Wis. (173H)*

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Precision Switches

Treats recent developments in switches for design engineers and other users. Vol. 2, No. 2, 8p.—*Micro Switch, Minneapolis-Honeywell Regulator Co., Freeport, Ill. (173J)*

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Describes panels that take place of pipe coils for industrial heating and cooling. Bul. 258, 4p.—*Dean Products Inc., Brooklyn. (173K)*

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Information on self-adjusting pumps in both sanitary and industrial models. 12p.—*Girton Mfg. Co., Millville, Pa. (173M)*

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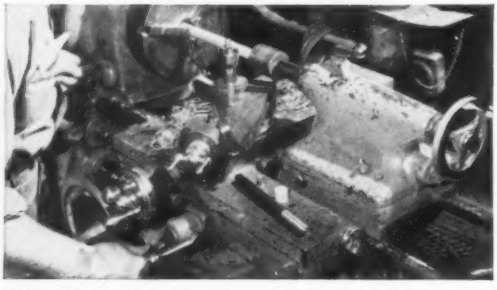
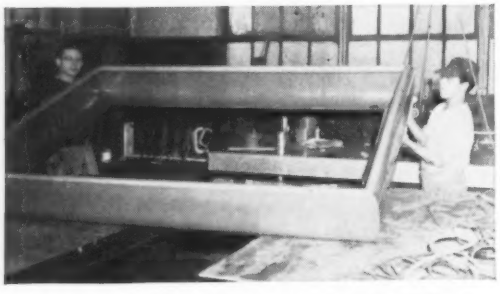
Bending Type 1 PVC pipe around wooden jig

Welding PVC distributor plate for chlorine stripping tower



PVC rod is ideal for many anti-corrosive screw machine products



Workman easily lifts PVC tank enclosure during fabrication

1. **Resists more than 280 chemicals**—Ryertex-Omicron PVC resists the attack of scores of commonly-encountered corrosive solutions and gases—acids, alkalis, waste products, etc. It is non-toxic and inert. It can take continuous service temperatures of up to 185°—is non-magnetic, non-sparking, will not support combustion and is not subject to electrolytic action.

2. **Forms easily**—After softening in a hot oil bath, rigid Ryertex-Omicron PVC pipe is easily bent around a simple wooden jig (see photo). Sheets and rods are also readily formed by heating to between 200° and 260° F.

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Reducing Valves

Describes sliding gate pressure reducing valves designed to give dead end shut off. Bulletin J-160, 6p.—*Jordan Industrial Sales Div. of OPW Corp., Cincinnati, Ohio. (177D)*

Code Index

Reference index facilitates finding information in the ASME Unfired Pressure Vessel Code.—*Downingtown Iron Works, Inc., Downingtown, Pa. (177E)*

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Information on drum dryers and flakers. Bul. 680, 4p.—*Vacuum Equip. Div., F. J. Stokes Corp., Philadelphia. (177F)*

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Design, specifications and operating details of new sliding type belt conveyors. Bulletin BCB-101, 2p.—*Carpo Manufacturing, Inc., Jacksonville, Fla. (177P)*

Electric Truck Operation

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Data on new automatic elevating forks for low mast trucks. 4p.—*Little Giant Products, Inc., Peoria, Ill. (177R)*

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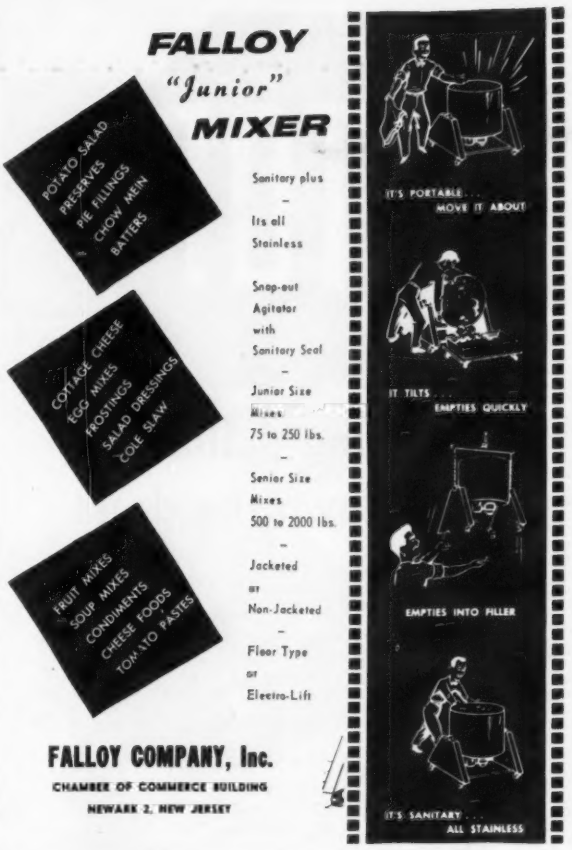

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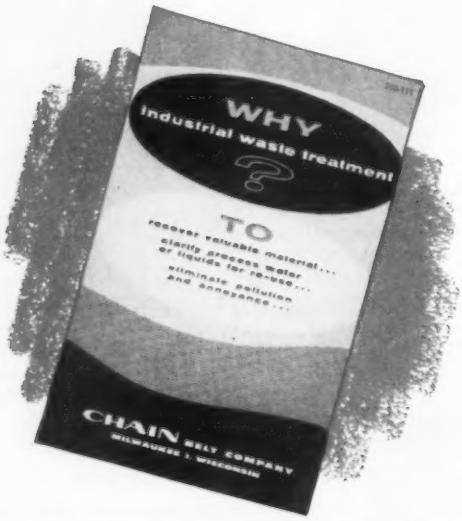

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Concerns multi property coating, for protecting against acids, alkalis, oils, solvents, moisture, etc. Bul. MS-57-25M, 13p.—*Mono-Seal Products, Everett, Mass. (178G)*

Floor Plates

Describes lug-anchored steel plates used to protect concrete floor and prevent skidding and slipping. Also gives detailed directions for installation. 4p.—*—Ralph V. Rulou, Inc., Philadelphia. (178H)*

Corrosion-Proof Construction

Explains the company's integrated service for plant-wide corrosion protection. Bul. C-1, 3p.—*Atlas Mineral Products Co., Mertztown, Pa. (178I)*

Ultrasonic Cleaners

Covers high capacity, production size ultrasonic cleaners. Data Sheet 600, 2p.—*The Narda Ultrasonics Corp., Mineola, N. Y. (178J)*

Data Files

File "L" covers Lastiglas process for coating surfaces of storage or processing tanks. File "B" covers fabrication and erection of tanks. —*The Bishopric Products Co., Cincinnati, Ohio. (178K)*

Protective Coatings

Describes company's line of neoprene protective coatings for concrete, wood, metals, rubbers. 4p.—*Atlas Mineral Products Co., Mertztown, Pa. (178L)*

Steam Cleaner

Describes cleaning unit that uses live steam from an existing supply. Bul. P-7578, 2p.—*Kelite Corp., Berkeley Heights, N. J. (178M)*

Fuses

Variety of fuses illustrated and explained. Form 48, 7p.—*Monarch Electric Corp., Jamestown, N. Y. (178N)*

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Details on sanitation products devised for efficient cleaning, preserving, finishing and maintaining buildings from floor to ceiling. Form 51OL417, 44p.—*Huntington Laboratories, Inc., Huntington, Ind. (178O)*

Steel Flooring

Describes and illustrates various types of steel flooring, 4p.—*Joseph T. Ryerson & Son, Inc., New York City. (178P)*

INSTRUMENTS

Flow Alarms

Describes fluid flow rate alarms for signaling or simple control functions. Bul. 165—*Brooks Rotameter Co., Lansdale, Pa. (178Q)*

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Design and construction of humidity indicators, recorders and controllers. 6p.—*Serdex, Inc., Boston, Mass. (178S)*

Potentiometer

Describes portable potentiometer with wide temperature and voltage range. Bul. T-57, 6p.—*Technique Associates, Inc., Indianapolis. (178T)*

Synchronous Motor

Technical, operational and design data on new permanent magnet synchronous motor. Bulletin PB-17—*Cramer Controls Corp., Centerbrook, Conn. (178U)*

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Description, construction details, and design configurations of *Thermo-switch* unit. 4p.—*Fenwal Inc., Ashland, Mass. (178V)*

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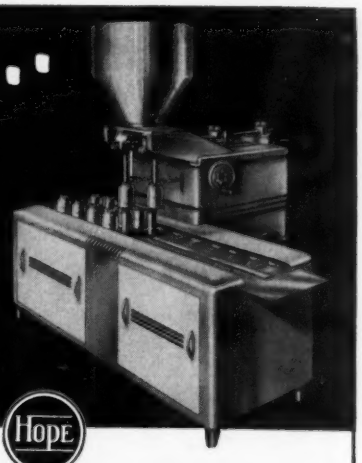

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For laboratory needs, for production testing and inspection, for equipment mounting . . . wherever high sustained accuracy and quick response are essential . . . WESTON all-metal thermometers have been widely adopted because they are more convenient to use, and far more durable and economical. Cases and stems are of 18-8 stainless steel – standard stem length 8" – 2" to 24" length available on order – dials 1¾" dia. – ranges from low as –100F to high as +500F. Require only 2" immersion in solids or liquids. Accuracy ½ of 1% of thermometer range. For the complete story, including data on all-metal thermometers for industrial use, write now for bulletin T-13. Weston Electrical Instrument Corporation, 614 Frelinghuysen Avenue, Newark 5, N. J. A subsidiary of Daystrom, Incorporated.

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Dials 2" dia.—18.8 stainless steel construction—ranges as low as —100F to high as +1000F — accuracy 1% of range.

Model 2282—standard stem length 8" including hub.

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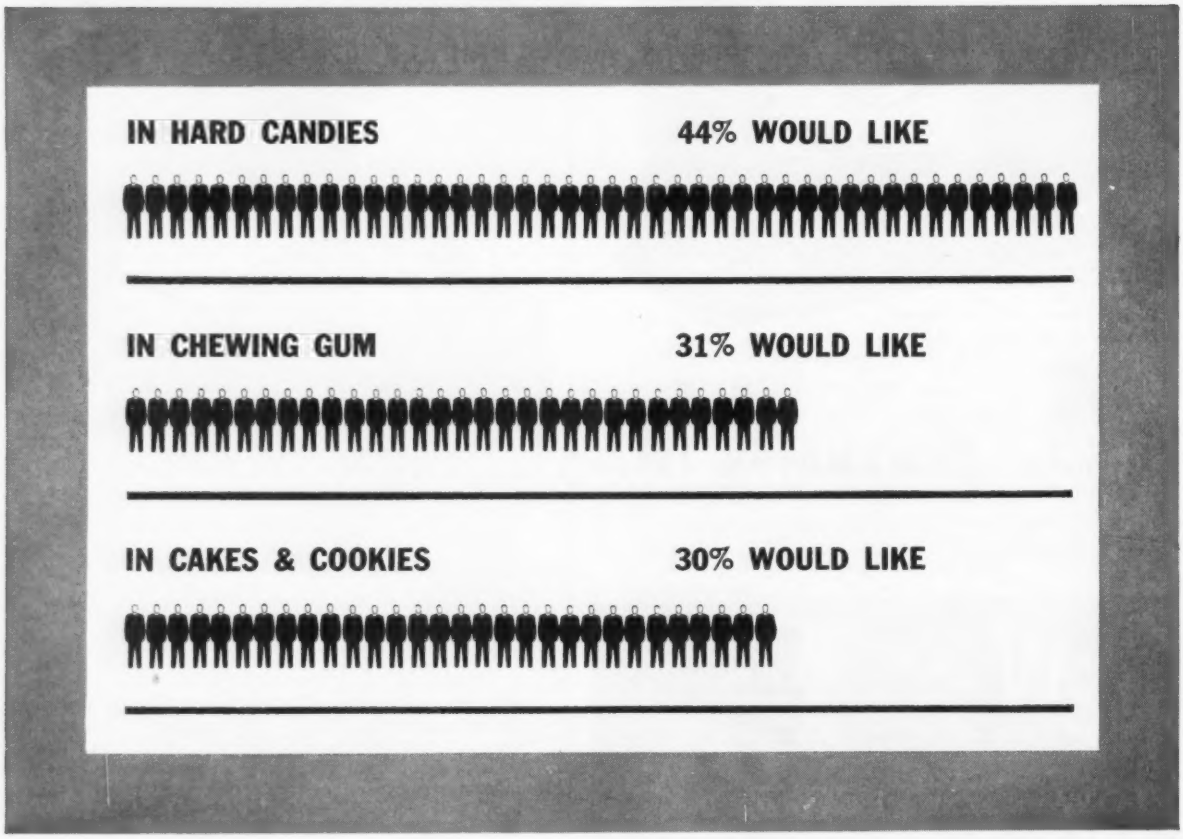
34,000,000 ADULTS WANT THIS FLAVORING



Anethole is the Answer!

Wherever flavoring is important, this recent survey by the Gallup Organization is revealing new markets for anise among one out of three adults. Trained Gallup Poll interviewers determined that anise, or the closely similar flavor, licorice, is preferred by millions in a wide variety of products. Here are some additional facts from this nation-wide survey:

- 34,000,000 adults (out of an estimated 103,000,000 U. S. adult population) are real fanciers, while another 16,500,000 adults like the flavor.
- A larger proportion of the fanciers is in the upper economic group.
- Slightly more women than men like anise flavoring.
- More younger adults than older persons say that anise flavor would appeal to them.
- Anise flavoring is more popular in the East and West and in communities of over 500,000 population.
- Those who like the flavor are strongly in favor of it!

Hercules anethole, a domestic equivalent to imported anise, is produced from a plentiful domestic raw material source to meet U.S.P. specifications. Anethole represents a dependable source of supply for a high quality product. Ask your regular supplier for Hercules anethole or flavors based on anethole, and include anethole-flavored products in your line.

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QUALITY CONTROL

Pipe and Fittings

Discusses small-diameter pipe and fittings for use to 450 F. and 100 psi. SG-11—*Sentinel Glass Co., Hatboro, Pa. (181A)*

Lab Apparatus

Laboratory equipment and apparatus fully described with prices, and illustrated with detailed wood cuts. Cat. 57G, 43p.—*Eberback Corp., Ann Arbor, Mich. (181B)*

pH Equipment

Describes industrial pH instruments, electrodes and accessories. Bul. 5400; 8p.—*Beckman Process Instruments Div., Fullerton, Calif. (181C)*

Paper Electrophoresis

Details a system of analysis by paper-strip electrophoresis. Form SBR-20, 8p.—*Spinco Div., Beckman Instruments, Inc., Palo Alto, Calif. (181D)*

Laboratory Ware

Wide selection of laboratory equipment described and illustrated. 16p.—*Schaar & Co., Chicago (181E)*

Rotary Pump

Describes laboratory pump designed for severe corrosive service. Bul. HCT-1057, 2p.—*ECO Engineering Co., Newark, N. J. (181F)*

TRANSPORTATION

Delivery Truck Bodies

New engineering ideas and fabricating materials that are revolutionizing today's concepts of delivery truck body design. 16p.—*Boyertown Auto Body Works, Inc., Boyertown, Pa. (181G)*

Refrigerators

Describes self-contained truck and trailer refrigerators. Form 187, 4p.—*Thermo King Corp., Minneapolis. (181H)*

Transport Tanks

Illustrates and describes transports made with high-tensile aluminum alloy sheet. Bulletin TT54237, 2p.—*The Heil Co., Hillside, N. J. (181I)*

Packer Bodies

Specifications and engineering features of low-cost refuse and garbage packer bodies. Form No. 219, 7p.—*M-B Corp., New Holstein, Wis. (181J)*

Ideal for Dairy and Food Industries

The Strahman Spray Nozzle does a better job with the least amount of water. This precision made nozzle enables the operator to get any type stream of water to do his job by simply pressing the lever. A soft spray is sent forth with slight pressure on the lever, and a strong straight stream may be had by pushing the lever all the way down. This convenient control of the wash water assures better cleaning with a lot less effort. The nozzle automatically shuts off the moment the lever is released, thereby eliminating all waste of water.

RENEWABLE RUBBER COVER. The sturdy cover protects the nozzle and your equipment against knocks and dents. When the cover becomes worn, replace it with a new one.

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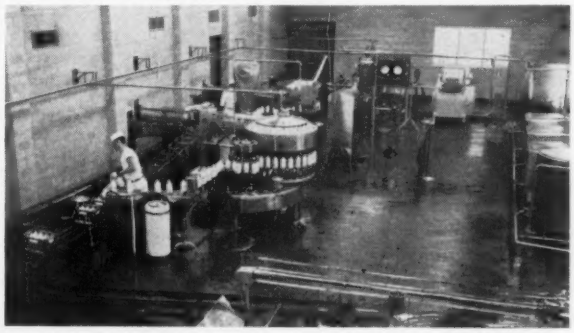
STRAHMAN VALVES, INC., 16 HUDSON STREET, NEW YORK 13, U. S. A.

Klimatic King units and King utility blowers are installed on the roof at Flynn Dairy Plant, Des Moines, Iowa.



Fresh air supply grills are seen along one wall of the milk processing room.

- **No more Excess Humidity**
- **Odors Eliminated**
- **Never a Dust Problem**
- **Continuous Air Circulation**
- **Maintain Constant Temperatures**

Flynn Dairy of Des Moines, Iowa has installed Klimatic King heating and ventilating units which are especially engineered for dairy and food processing applications.

Standard units are fabricated with galvanized steel cabinets and insulated to eliminate condensation and dripping . . . have automatic temperature and ventilating controls. Units have two speed motors for "high" and "low" production periods . . . means operating economy. Klimatic King . . . the quality leader in its field . . . can be used for cooling as well with the simple addition of a cooling coil. Available in sizes 3,500 to 20,000 CFM.

Write today for detailed bulletin. More than fifty years experience at your disposal.

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Cooling, Ventilating and Heating Systems

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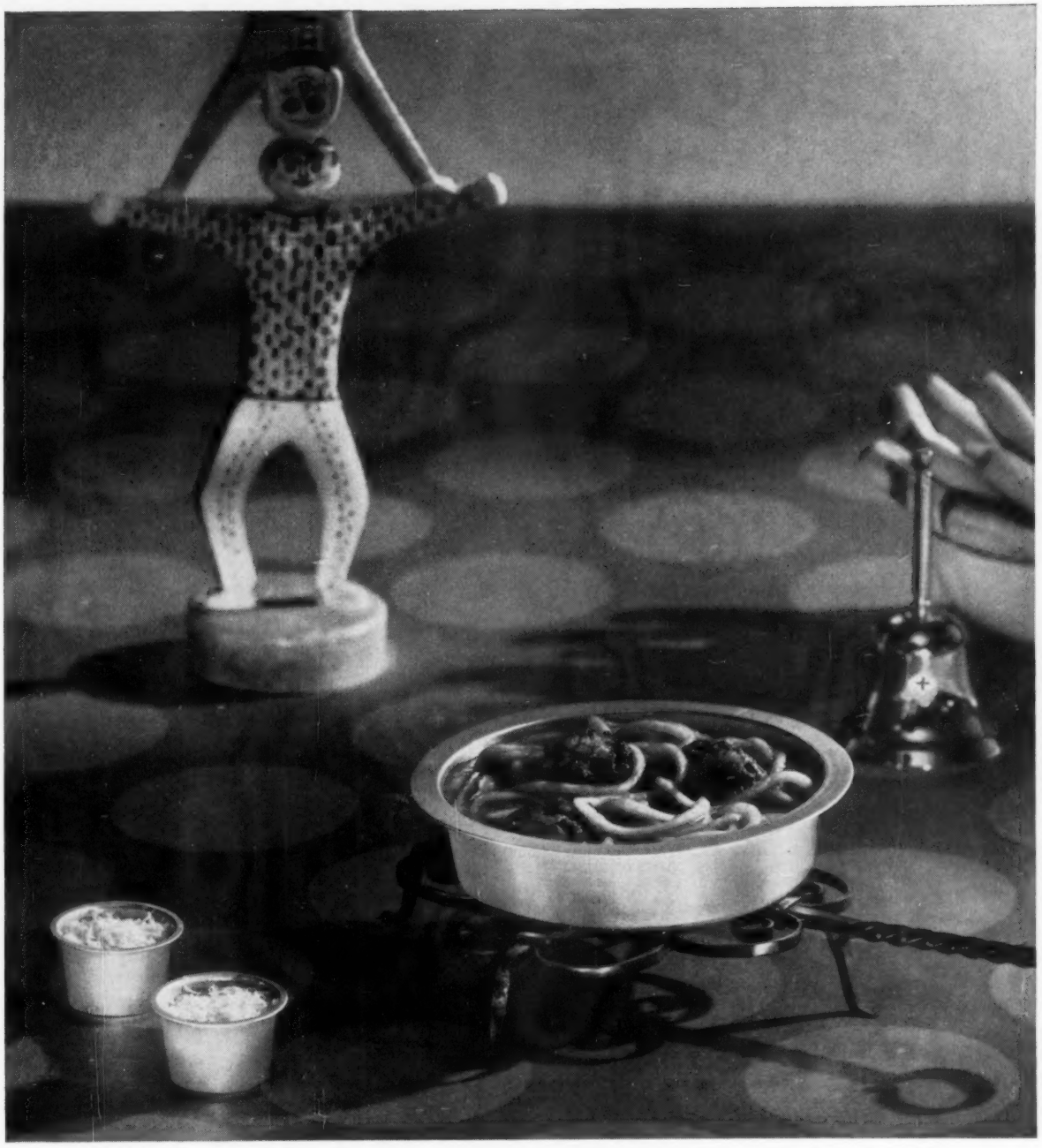

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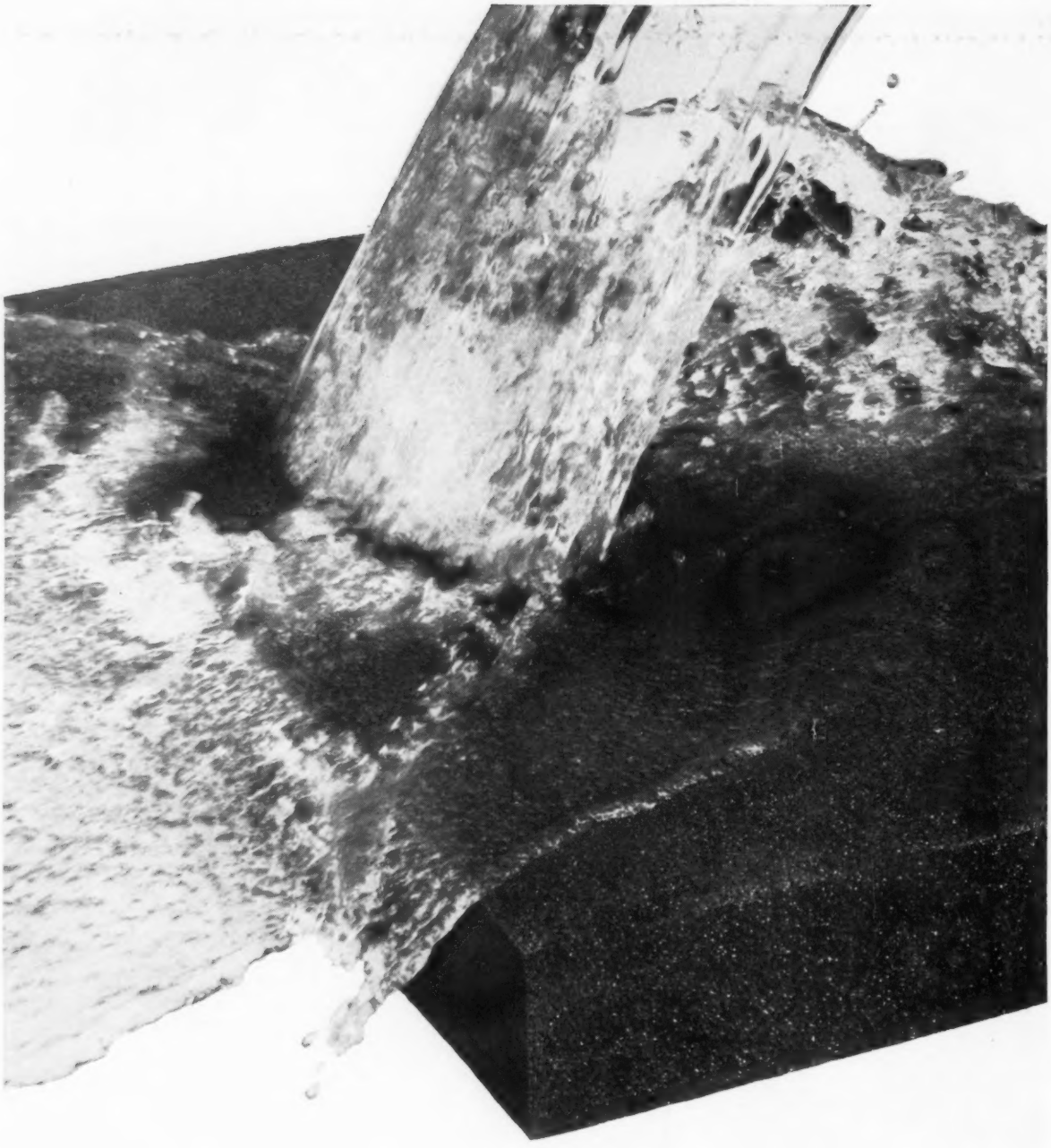

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Insulation that absorbs moisture soon stops insulating. That happens to most insulations, in time. It never happens to FOAMGLAS . . . because FOAMGLAS is moisture-proof. Its sealed glass cells can never absorb water or vapor. It always maintains its full, original insulating value. There's more to this insulation investment story. FOAMGLAS is incombustible . . . dimensionally stable . . . unusually strong . . . acid-proof . . . vermin-proof . . . easy, economical to handle and install. Find out how to make this long-term investment in your own insulated buildings and equipment. Write for our latest catalog.

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Modern Food Processing

PROCESS ENGINEERING IN THE FOOD INDUSTRIES *By R. J. Clarke. Published by Philosophical Library, 15 E. 40th St., New York City 16. 1957. 355 pages. Price:* $10.

This handy manual is an authoritative guide to the increasing complexities of modern food processing.

Unit operations have been retained for convenience. Each operation is considered under three headings: general principles based on purpose, mechanism, rate factors, methods, and powered needed; description of equipment; and an illustrative example of plant used in the food industry.

Directed at food plant management, the book can be an important aid to the executive concerned with all phases of the plant operation.

Dairying From A to Z

DAIRY PLANT MANAGEMENT *By P. H. Tracy, G. D. Armerding, and H. W. Hannah. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York City 36. 1958. 439 pages. Price:* $8.50.

The latest in the publisher's Agriculture Sciences series, this book is a must for dairymen. The authors —backed by many years of experience—trace the problems and techniques of dairying from the purchase of land as a plant site to the training of supervisory personnel.

Major emphasis is placed on labor relations, business management, business law, and the all-important plant efficiency.

This authoritative manual is of value not only to beginners in dairying, but can serve as a helpful reference to experienced operators.

Handy Pump Reference

PUMP OPERATION AND MAINTENANCE *By Tyler G. Hicks. Published by McGraw-Hill Book Co., 330 W. 42nd St., New York City 36. 1958. 275 pages. Price:* $9.

This newly published manual provides the supervising engineer, operator, and maintenance personnel with a handy guide to pump use and maintenance. Every major class and type of pump is included with specific instructions for installing, starting up, routine operation, periodic maintenance, and major overhaul.

All new developments in pumps have been incorporated, including the barrel-type centrifugal.

Marketing Men Report

MARKETING'S ROLE IN SCIENTIFIC MANAGEMENT *Edited by Robert L. Clewett. Published by American Marketing Assoc., 27 E. Monroe St., Chicago 3. 1957. 608 pages. Price:* $5.

The proceedings of the 39th National Conference held in Detroit last summer have been edited and compiled in this helpful publication.

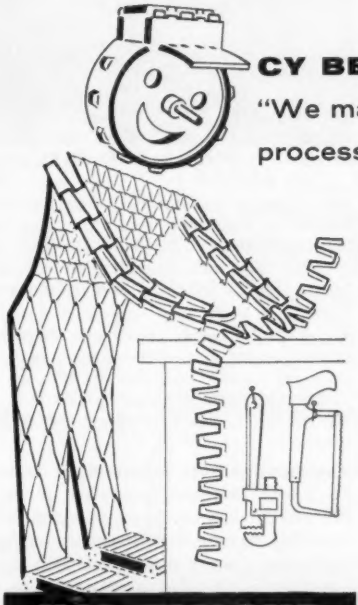
It features the comments of leading marketing authorities on such topics as responsibilities of marketing management, product planning and development, changing trends in advertising and sales promotion, and many others. A separate section is devoted to discussions of the economic and marketing outlook for major industries.

Booklets & Reports

TECHNICAL AND DISTRIBUTION RESEARCH FOR THE BENEFIT OF SMALL BUSINESS. *(PB 131460) Published by U. S. Dept. of Commerce, Washington, D. C. 287 pages. Price:* $2.50. Proceedings of President's Conference held in 1957.

TOWARD THE FACTORY OF THE FUTURE *(Special Report No. 28). Published by American Management Assn., New York City. 96 pages. Price:* $2.50. Papers presented by leading industrial figures at AMA Manufacturing Conference.

REGULATIONS GOVERNING THE MEAT INSPECTION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE. *Published by USDA, Washington, D. C. 226 pages.* Manual covers all facets of government meat inspection.



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Cyclone makes all four basic styles of conveyor belting: spiral woven friction drive, spiral woven chain drive, flat wire friction or sprocket drive, and flex-grid. These are available in the widest variety of sizes, meshes, weaves, steels and alloys. We make reinforcing members, flights, side plates and other specialties to meet specific needs. That's why our recommendation can be tailored to *your* plant and *your* product. Why not contact a trained Cyclone representative for help in analyzing your processing and material handling problems? Fill in the coupon today.

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Using Salt Efficiently

by INTERNATIONAL SALT COMPANY, INC.

Hydraulic Handling—Quick, Economical Way to Move Salt into Storage

Here's a new, effective method for moving salt from delivery cars or trucks into plant storage, without disrupting other operations. Hydraulic Handling systems, already in operation in several plants, have eliminated the expense of mechanical unloading equipment, and cut down considerably on man-hours needed to do the job.

What is Hydraulic Handling? Very simply, Hydraulic Handling is the movement of granular salt in circulating saturated brine, through pipes. Referring to the diagram, you will note that dry salt from the hopper car is mixed with saturated brine in a salt-receiving pit, to form a slurry of the saturated brine and undissolved salt. This slurry is pumped through a pipe to a salt-storage tank. Overflow brine from the tank continuously returns to the slurrying pit to carry more salt into storage.

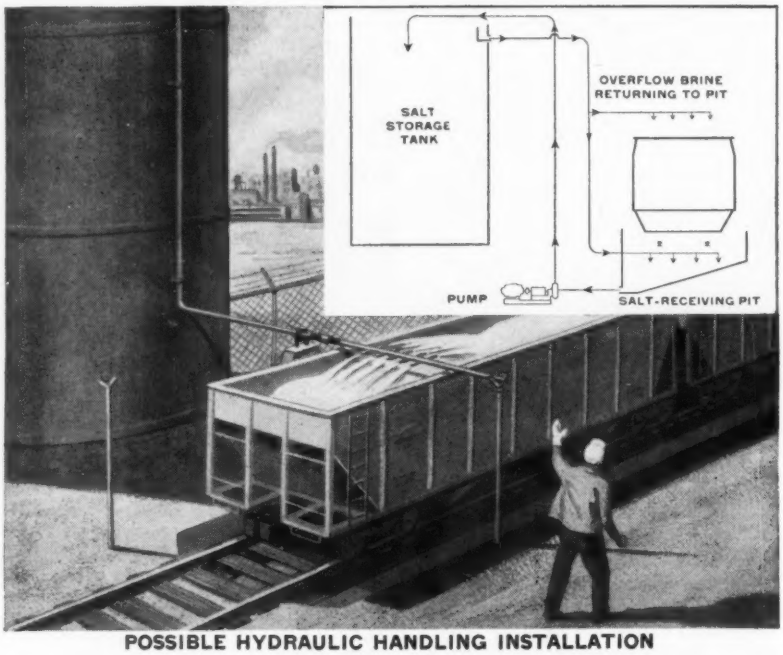
Advantages of Hydraulic Handling. Every Hydraulic Handling installation has a number of exclusive advantages:

1. Great flexibility. Because *pipes* do the work of carrying salt, a Hydraulic Handling system can be installed anywhere in the plant. Piping is flexible, and can be run where it won't interfere with other plant operating activities.

2. No need to move existing equipment. Machines that might obstruct mechanical handling equipment simply don't get in the way of a Hydraulic Handling installation.

3. Long life, low maintenance. You need no safety guards . . . no roofing to protect salt from weather . . . no belt conveyors, elevators or similar pieces of mechanical handling equipment. Also, there is never any salt dust that might corrode vital plant equipment. As a result, Hydraulic Handling installations have a long life, with very little maintenance expense.

4. Unlimited capacity. Hydraulic Handling systems can be designed to unload, move and store any amount and type of salt—rock or evaporated. Whatever your specific unloading needs, Hydraulic Handling can satisfy them.



POSSIBLE HYDRAULIC HANDLING INSTALLATION

You can get more information on how Hydraulic Handling can work in your plant to cut down salt-unloading and salt-handling expense from International Salt Company. One of our experienced Sales Engineers will be glad to work with you to determine the best system of Hydraulic Handling for your specific needs. He can also help you use salt efficiently in *all* your plant operations needing salt or brine.

Behind this qualified salt specialist are all the resources and experience of International Salt Company. We produce both Sterling Rock Salt and Sterling Evaporated Salt in all types and sizes . . . plus automatic equipment for making brine from both kinds of salt. So our sales engineer can recommend the type and size of salt most perfectly suited to your needs. He can also recommend the most efficient and inexpensive methods for storing, handling or using salt or brine. Ask him . . . send a card or letter to International Salt Company, Inc., Scranton 2, Pa. . . . or contact our nearest sales office.

INTERNATIONAL SALT CO., SCRANTON, PA.

Sales Offices: Atlanta, Ga.; Chicago, Ill.; New Orleans, La.; Baltimore, Md.; Boston, Mass.; Detroit, Mich.; St. Louis, Mo.; Newark, N. J.; Buffalo, N. Y.; New York, N. Y.; Cincinnati, O.; Cleveland, O.; Philadelphia, Pa.; Pittsburgh, Pa.; Memphis, Tenn; and Richmond, Va.

For rock-salt users, Hydraulic Handling is especially economical when used with combined wet-storage and dissolving tanks or with International Salt Company's famous Sterling Wet-Storage Lixator. These units store Sterling Rock Salt the same way Hydraulic Handling moves it: combined with saturated brine. Thus the salt-and-brine slurry delivered through Hydraulic Handling to the Lixator *is already in the correct form.* The Lixator delivers 100%-saturated Lixate Brine through pipes to any point of use in the plant, and automatically makes more brine as needed.

From delivery to use, dry rock salt is never handled in plants equipped with both a Hydraulic Handling system and a Sterling Lixator.

Service and Research are the Extras in **STERLING SALT**

PRODUCT OF INTERNATIONAL SALT COMPANY, INC.

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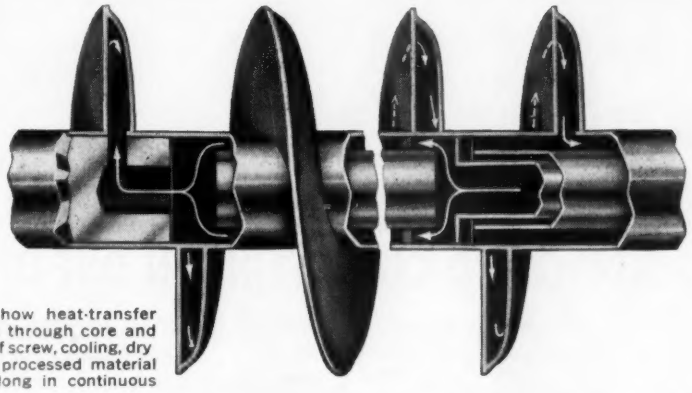
Do HOLO-FLITE savings like these suggest profit-boosting applications in YOUR plant?

Holo-Flite—the revolutionary screw-conveyor-type heat exchanger that cools, dries or heats materials in continuous bulk flow, has many applications throughout the process industries—applications that save time, save space, save labor and improve product quality. For example, in the Sugar industry alert operators have found Holo-Flite the ideal solution to a wide range of processing problems . . .

holo-flite* INSTALLATIONS IN SUGAR INDUSTRY NOW COOL 1.6 BILLION POUNDS PER YEAR!



Arrows show how heat-transfer medium flows through core and hollow blades of screw, cooling, drying or heating processed material as it moves along in continuous bulk flow.

In the Sugar industry alone, Holo-Flite equipment cools more than 1,600,000,000 lbs. a year. And this is just one of many industries where Holo-Flite's many installation and operating advantages are making major savings possible.

*"Holo-Flite" T.M. Reg.

HOLO-FLITE IN-PROCESS USE

- Holo-Flite cools granulated or powdered sugar with equal ease!
- Discharge can be directed into multiple points of use, and dehumidified air is seldom necessary!
- Ideal for pre-cooling sugar going into cake mix and confection-coating processes!
- In candy making, Holo-Flite cooled sugar prevents distillation of essences and delicate flavors!
- With Holo-Flite, sugar is cooled as needed, eliminating costly bulk refrigeration prior to use!

HOLO-FLITE BASIC SUGAR PRODUCTION

- Sugar cooled by Holo-Flite is free-flowing for quick, simple bulk car loading!
- Quality is uniformly high without perceptible crystal degradation!
- Cooling method is dust-free, eliminating need for troublesome bag collectors!
- Efficient Holo-Flite design permits easy clean-out (although this is generally unnecessary)!
- Holo-Flite can easily be mounted on loading bridge over hopper cars to maintain outlet temperature levels from cooler to car!
- The Holo-Flite heat exchange principle is equally adaptable to use of cooling tower water, refrigerated water systems or recirculated refrigeration media!

Let us send you descriptive literature and make recommendations for your processes. No obligation, of course!

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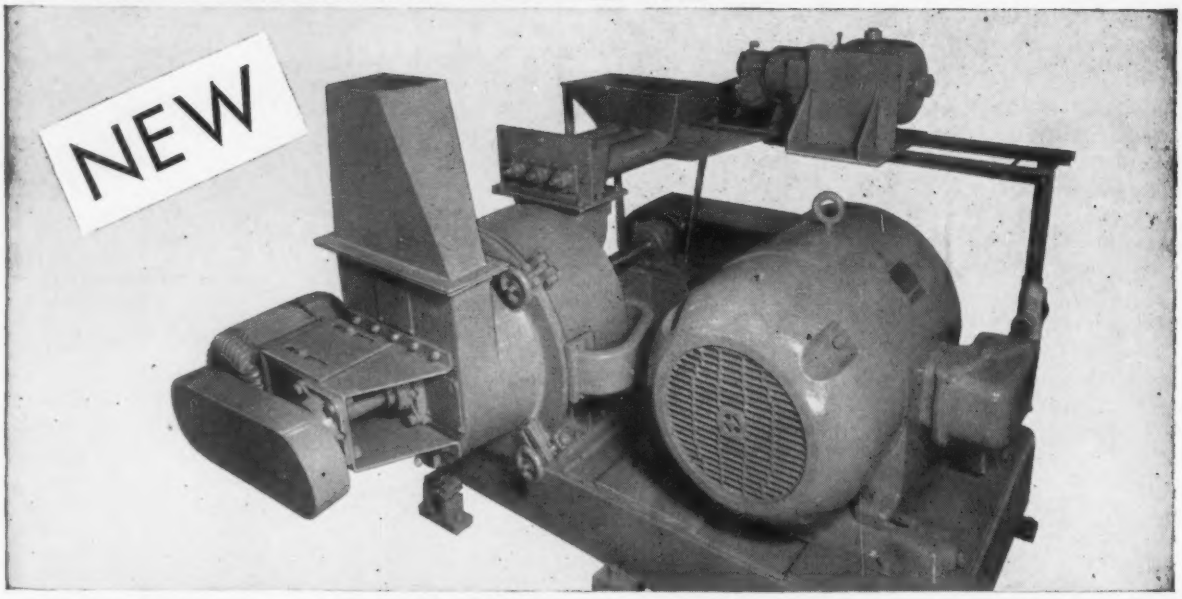


FOR PRECISION GRINDING AND CLASSIFYING IN ONE OPERATION

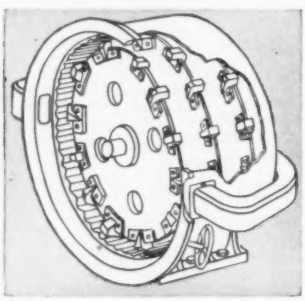
The PULVOCRON . . . An Air Attrition Impact Pulverizer and Classifier with Controlled Radial Inward Air Classification.

Now in one compact unit you can have a pulverizer and a classifier plus an automatic feeder, with separate controls over each. This assures positive particle size control and high capacity over a wide range of products. The Pulvocron will produce particle sizes from a range of 99% less than 5 microns or as coarse as 50 mesh, depending on the material and desired results.

The grinding chamber contains three adjustable plates with twelve staggered beaters on each. It also features added versatility through interchangeable liners of corrugated, perforated or smooth finish, plus variable rotor stator clearances.

The Classifier unit is on a hinged section with quick-open locks for simplicity of operating adjustment or cleaning.

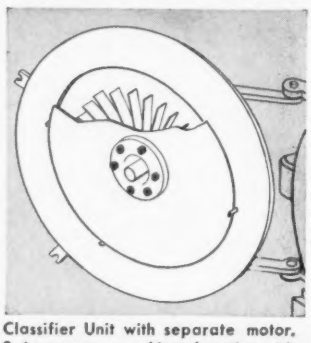
Material is both ground and classified through high centrifugal pressures set up by the beater and classifier plates. The Pulvocron is designed with oversize returns for automatic feed back of any oversize for further grinding.



Grinding chamber with adjustable plates, removable liners and oversize returns.

CONSULT STRONG-SCOTT

Strong-Scott offers you a modern up-to-date laboratory containing specialized testing equipment. This is backed by an expert engineering staff to furnish layout and design service at no additional cost to you.



Classifier Unit with separate motor. Swings open as a hinged section with quick open locks.

WRITE FOR FREE COLOR BULLETIN

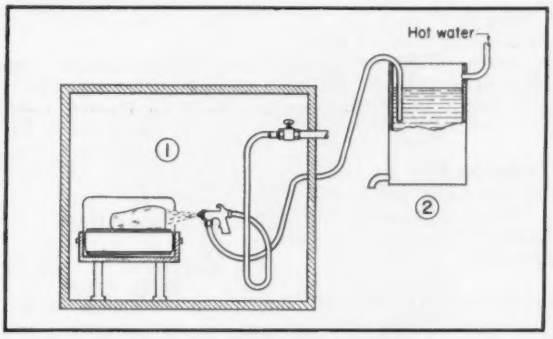
The **Strong Scott** Mfg. Co.

DEPT. FE-358

Equipment Designed for Better Processing

451 TAFT STREET N.E., MINNEAPOLIS 13, MINNESOTA

RECENT INVENTIONS



Curbs Dehydration of Freshly-Cut Meat

Product (held at below 40F.) in chamber (1) is sprayed with molten fat from heated reservoir (2). Congealed droplets form protective coating on meat surface to curb loss of moisture and preserve bloom.—*L. Letney to Rath Packing Co., Waterloo, Iowa. No. 2,819,975. Jan. 14, 1958.*

PRODUCTS

Fluid Shortening (Pourable at 60F.) Comprising Liquid-Glyceride Carrier, Saturated Fatty Mono-, Diglycerides—Procter & Gamble Co., Cincinnati. No. 2,815,286.

Cheddar Cheese Made by Holding Curd at Quick-Freezing Temperature for 1 Hr. Before Aging—Swift & Co., Chicago. No. 2,816,036.

Powdered Fruit Juices Produced by Thin-Film Vacuum Evaporation of 70-85% Concentrate to 96% Solids, Cooling, Grinding—USA. No. 2,816,039.

Synthetic Chocolate Comprising Furfuryl Compound, Sugar, Protein Hydrolysate—S. L. Ruskin, New York City. No. 2,816,834.

Powdered Fruit Juice Made by Mixing (Under Pressure) 200-Fold Essence With 96%-Solids Concentrate, Cooling to Solidify, Pulverizing—U. S. A. No. 2,816,840.

Decaffeinated Coffee Prepared by Immersing in Aqueous Coffee-Solubles Solution, Solvent Extracting, Separating of Product, Water-Washing—Standard Brands, Inc., New York City. No. 2,817,588.

Grated American Cheese Containing Yeast for Enhanced Flavor, Stability—National Dairy Products Corp. No. 2,817,590.

Concentrated Orange Extract, Including Peel Oil and Pectin, for Making Stable Orange-Milk Drink.—E. B. Ransom, Boston. No. 2,818,342.

PROCESSING

Extracting Color From Annatto by Soaking Seeds, Contacting With Fatty Oil—M. B. Barnett, Long Beach, Calif. No. 2,815,287.

Rendering Fat by Heating Agitated Comminuted Particles, Evaporating Water, Filtering—Pavia Process, Inc., Wash., D. C. No. 2,815,356.

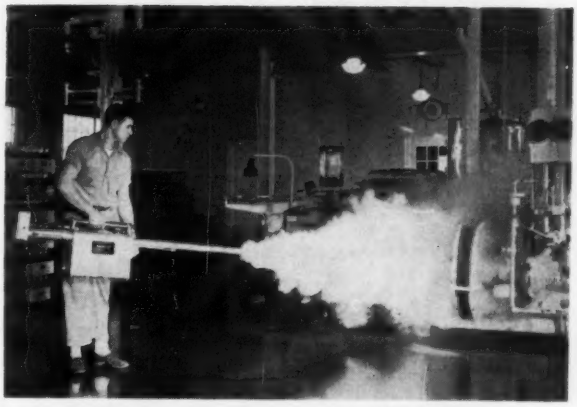
Decorticating Sesame Seeds by Treating With Hot Caustic, Removing Hulls—Palazio, Horvilleur & Co., Managua, Nicaragua. No. 2,815,783.

Improving Resin Extraction of Hops by Ultrasonic Irradiation — Ultra-Technik G.m.b.H., Hamburg-Eidelstedt, Germany. No. 2,816,031.

Debittering Navel Orange Juice by Solvent Extracting, Separating Serum From Pulp, Distilling Serum, Recombining With Pulp—Sunkist Growers, Inc., Los Angeles. No. 2,816,-033.

Want more information on any of these recent patents—if so, you may obtain detailed printed copies by writing direct to the U. S. Patent Office, Washington, D. C., giving serial numbers of those you want and enclosing 25¢ for each copy.

DYNA-FOG* JR.
TRADE-MARK



SOLVES INSECT PROBLEMS

FACTORIES • CANNERIES • BAKERIES • CAFETERIAS
BOTTLING PLANTS • BREWERIES • FOOD PROCESSORS
OVER 100 APPLICATIONS

WEIGHS JUST 19 LBS.

- "Outfogs" anything in its class—extremely dense insecticide fog output at rates up to 15 gal. per hour.
- Fog particle size selection from 0.5 to 50 microns.
- Only 1 moving part. Nothing to lubricate.
- Safety assured by new automatic formulation shut-off valve.

Sells for
Only $289.50
f.o.b. Factory

NOTE: We also make a Dyna-Fog insecticidal fogging machine that does work of 650 lb. and heavier machines, yet weighs only 100 lbs!

Write for complete data without obligation.

Curtis
AUTOMOTIVE DEVICES, INC.
DYNA PRODUCTS DIVISION • P. O. BOX 297-K • WESTFIELD, IND.

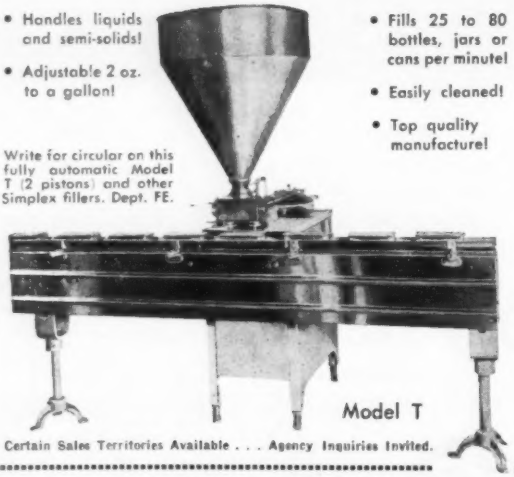
The moment of decision
LET ADVANCE DESIGN
SPRAY NOZZLES
HELP YOU HOLD HER by improving product quality in WASHING, MIXING, SPRAY DRYING AND COOLING
Once you know the ideal values for such variables as particle size or impact . . . you will find Spraying Systems spray nozzles the "precision" instruments to meet your performance specifications. When product quality depends upon spray nozzles, you can depend upon Spraying Systems. Your inquiry is invited...ask for Catalog 24.
WRITE FOR CATALOG 24
SPRAYING SYSTEMS CO.
3212 Randolph St. • BELLWOOD, ILLINOIS
SPRAY NOZZLE DESIGN FOR NEW DIMENSIONS IN CONTROL AND PERFORMANCE

THIS INEXPENSIVE FILLER DOES YOUR FILLING JOB!

SIMPLEX FILLER

- Handles liquids and semi-solids!
- Adjustable 2 oz. to a gallon!
- Fills 25 to 80 bottles, jars or cans per minute!
- Easily cleaned!
- Top quality manufacture!

Write for circular on this fully automatic Model T (2 pistons) and other Simplex fillers. Dept. FE.



Certain Sales Territories Available . . . Agency Inquiries Invited.

F. L. BURT COMPANY

571 - 7th Street • San Francisco 3, Calif. • Phone KLondike 2-2020

Name .....

Address .....

City ..... State .....

Heat-Processing Meat in High-Frequency Electrical Field—Wilson & Co., Chicago. No. 2,816,034.

Utilizing By-Product Raw Potato Slivers by Washing, Cooking, Adding to Diced Cooked Spuds, Refrigerating for Use as Hash-Brown-Potato Stock—USA. No. 2,816,037.

Deodorizing Milk by Flashing Occluded Gases and Volatiles in Closed Chamber—Borg-Warner Corp., Chicago. No. 2,816,500.

Debittering Citrus by Holding 7-20 Days at 80-90 F., 75-90% R.H.—USA. No. 2,816,835.

EQUIPMENT

Poultry Stunner Employing Electrode, Ventilated Housing, Cupped End Bells, Electrical Controls—Pickwick Co., Cedar Rapids, Iowa. No. 2,814,068.

Pie-Making Unit With Open-Bottom Dough Hopper, Upper Feed Rolls, Lower Dough-Strip Rolls, Intermediate Compression Chamber—H. W. Morgan & Co., Philadelphia. No. 2,814,260.

90-Deg. Carton Turner Synchronized With Conveyor—Procter & Gamble Co., Cincinnati. No. 2,814,376.

Centrifugal Atomizer Having Shaft-Mounted Circular Plate, Atomizer Basket of Concentric Disks, Elongated Impact Elements—Foremost Dairies, Inc., San Francisco. No. 2,814,527.

Heat-Processing Can Conveyor Comprising Continuous Conduit, Flexible Driven Belt Supported by Cans, Heating, Cooling Means—J. O. Reed, Wash., D. C. No. 2,814,980.

Conveyor-Mounted Unit for Separating Egg Whites From Yolks—C. H. Willsey, Topeka, Kan. No. 2,815,055.

Shrimp-Flotation Conveyor Employing Rotatable Screw, Backbone Support, Resilient Blanket, Control Means—Peelers Co., Houma, La. No. 2,815,117.

Pliofilm-Lined Cheese Mold (Combination Hoop, Aging and Shipping Container) Comprising Concentric Cylindrical Fiber Shells, Plastic Liners, Perforate Wooden Bottom, Split-Metal Ring, Wooden Follower—Swift & Co., Chicago. No. 2,815,708.

Unscrambler (Open-Top Cans) Having Central Conveyor, Upwardly Spaced Side Belts With Opposed Runs, Single-File Feed Means—J. Albertoli, San Francisco. No. 2,815,845.

Pallet Loader-Unloader Employing Spaced-Apart Chains and Rolls for Handing Cases Singly in Accumulating or Removing Layers—H. Laub, Paramount, Calif. No. 2,815,870.

PACKAGING

Packaging Dates by Aligning Fruit, Impaling, Registering a Group Above Carton, Releasing—Manett Enterprises, Inc., New York City. No. 2,815,622.

Assembler for Meat Packager Employing Conveyor With Spaced Ring Plates, Disk, Ram—D. R. Forry, Hilliards, and H. B. Tryon, Columbus, Ohio. No. 2,815,624.

Crown-Crimping Collet Having Circumferentially-Slotted Cylinder, Spring Biasing Means—San Francisco Brewing Corp. No. 2,815,630.

Heatable Sausage Container Consisting of Compartmented Metal-Foil Pan, Dished Areas, Cover—Swift & Co., Chicago. No. 2,816,038.

Label Feeder Comprising Magazine, Rotatable Pneumatic Pickups—A. Seragnoli, Bologna, Italy. No. 2,816,760.

Heat-Sealable Toffee Wrapper Having Opposed Tapered Edges Overlapped to Form Chevron-Shaped Seam, Triangular Flaps—Rose Bros. Ltd., Gainesboro, England. No. 2,816,838.

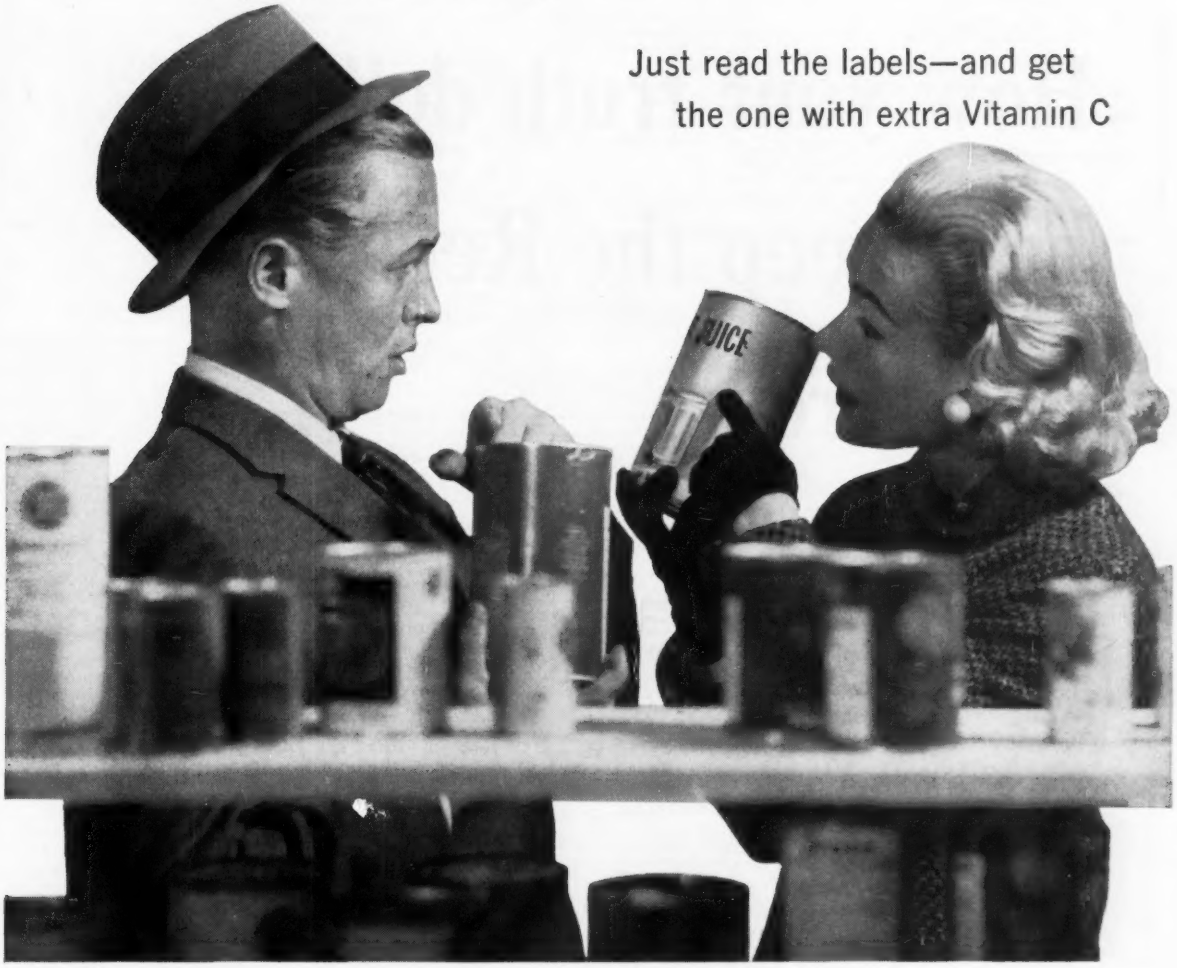
Bacon Packer (for Assembling Slices in Pleated Carrier Strips) Employing Stepped Rotary Unit, Synchronized Carrier-Strip and Product Feeds, Cut-Off Means, Discharge Conveyor—Cudahy Packing Co., Omaha, Nebr. No. 2,817,198.

Bag Closer Having Conveying Means to Guide and Engage Container, Gather and Bind Flattened Edge—H. K. Dennison, Merchantville, N. J. No. 2,817,840.

Tubular-Casing Filler Adapted to Pack a Core of One Product, Surrounding Sleeve of Another Food—G. F. Kinkead, Louisville, Ky. No. 2,818,034.

Which juice do you want—
they all look alike to me

Just read the labels—and get
the one with extra Vitamin C



No doubt about it:
Merck Ascorbic Boosts Juice Sales

You can make promotable label claims, increase sales and profits by standardizing the Vitamin C content of your fruit and vegetable juices with Merck Ascorbic Acid. Noncitrus and popular citrus-noncitrus blends are especially suitable for fortification because of their naturally low Vitamin C levels.

An improved ascorbic acid cost picture, the simplicity of fortification and its extra consumer appeal are all working to your advantage. And so is Merck.

As one of the world's largest ascorbic acid producers, Merck offers you prompt, dependable delivery plus whatever technical assistance you require. For the full story, call in your Merck representative or write directly to Rahway.

MERCK & CO., INC.
RAHWAY, NEW JERSEY

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For more data, circle this page number on card at back →

How your truth dollars help keep the Reds in the red

• The truth dollars you give to Radio Free Europe help keep truth on the air behind the Iron Curtain.

And the truth is an enormously disruptive force to the Reds. For it keeps their captive people thinking . . . wondering . . . and less than completely dominated. The truth keeps needling the Reds. Breaks through their monopoly of lies. Keeps them unsure. Off balance. And thus the truth keeps up to forty fully armed Red divisions tied up policing Russia's satellite countries. Forty divisions, mind you, that might otherwise be put to more aggressive use elsewhere . . . and who knows where?

Your truth dollars keep the 29 super-powered transmitters of the Radio Free Europe network on the air . . . broadcasting the truth behind the Iron Curtain . . . every hour of every day.

Why *your* truth dollars?

Because Radio Free Europe is a private, non-profit organization supported by the voluntary contributions of American business and the American people. And *your* dollars are urgently needed to keep it on the air . . . to help operate its transmitters, pay for its equipment and supplies, and its scores of announcers and news analysts in 5 languages.

Help keep the Reds in the red. Send your truth dollars to Crusade for Freedom, care of your local postmaster.

FREEDOM IS NOT FREE!

Your Dollars Are Needed To Keep Radio Free Europe On The Air

SEND YOUR TRUTH DOLLARS TO

CRUSADE for FREEDOM

CARE OF YOUR LOCAL POSTMASTER

PUBLIC SERVICE ADVERTISING COUNCIL

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executives, management, technical, selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work

Civil Service Opportunities
Selling Opportunities Wanted
Selling Opportunities Offered

Employment Agencies
Employment Services
Labor Bureaus

DISPLAYED —RATES— **UNDISPLAYED**

The advertising rate is $37.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$1.00 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Positions Wanted—The rate is one-half of the above, payable in advance.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS or Inquiries to Classified Advertising Division of FOOD ENGINEERING, P. O. Box 12, N. Y. 36, N. Y.
April issue closes March 27th.

FOOD TECHNOLOGIST

Expanding, nationally known manufacturer of chemicals for food and other industries has newly created opening for Food Technologist or Biochemist and Ph.D or equivalent training to conduct research and development work of products for meat and baking industries; enzymatic products and anti-oxidants. Prefer individual with previous experience in these areas, but will carefully consider recent graduate with closely related food technology courses.

Excellent future promotional possibilities. Age 30 to 40. Attractive starting salary; progressive program of employee benefits. Suburban N. Y. City location. Kindly submit complete resume including salary objectives.

P-7401, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CHEMICAL ENGINEERS

Immediate vacancies for chemical engineers to do process design and development work at the pilot plant level in our food research laboratories in Minneapolis. 22-30 years old, B.S. degree in Chemical Engineering. Experience in food research, food pilot plant or food production desirable. Include complete resume of training and experience in letter.

PERSONNEL MANAGER
CENTRAL RESEARCH LABORATORIES
GENERAL MILLS, INC.
2010 EAST HENNEPIN AVENUE
MINNEAPOLIS 13, MINNESOTA

LABORATORY SUPERVISOR QUALITY CONTROL

Experienced man to supervise and administrate quality control laboratory in prepared mix plant. Experience involving supervision required; Prefer B.S. education. Apply

P-7218, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

Don't forget the

BOX NUMBER

When answering the classified advertisements in this magazine don't forget to put the box number on your envelope. It's our only means of identifying the advertisement you are answering.

WE NEED

FOOD TECHNOLOGISTS and
FOOD CANNING CANDIDATES
—junior to top-level

Call, write or wire:
Gladys Hunting (Consultant)
Drake Personnel, Inc.
220 S. State St., Chicago 4, Ill.
HArrison 7-9000

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITION VACANT

Processor and foreman for Maraschino cherry plant; one who can take complete charge; established concern; write experience, references, age, physical description, salary desired. P-7304, Food Engineering.

EMPLOYMENT SERVICE

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—Jira Thayer Jennings, P. O. Box 674, Manchester, Vermont.

POSITION WANTED

Food Technologist—Chemist, Ph.D. instant foods & beverages. Creative leader. Potents, awards. PW-7395, Food Engineering.

Technical Service, Technical Sales Representative. Food Technologist 9 years experience fruits, vegetables, citrus, related products. Extensive national contacts with packers, distributors, brokers, warehouses. Excellent record of service and good public relations. Travel or relocate. PW-7421, Food Engineering.

Chemical Engineer—Food Technologist thoroughly experienced in plant management, cost controls, labor standards, pilot plant, plant research. Heavy quality control including SQC. Seeking responsible position in Food Industry. Patents and publications. BCHE. Age 43. PW-7139, Food Engineering.

WANTED

Anything within reason that is wanted in the field served by Food Engineering can be quickly located through bringing it to the attention of thousands of men whose interest is assured because this is the business paper they read.

We Need A PRODUCTION MANAGER for a Perishable FOOD MANUFACTURING PLANT

Quality minded, New England food producer has an excellent opportunity for a well-trained production executive who has the following qualifications:

- College graduate or the equivalent.
- At least five years supervisory or middle management experience in a perishable food manufacturing business.
- Between 40 and 50 years of age.
- Food technology back-ground.
- Knowledge of Bakery and Soda Fountain items.
- Knowledge of modern processing equipment.
- Knowledge of sanitation, quality and cost control.

Send resume of education, experience and salary history.

To: **P-7411,** Food Engineering
520 N. Michigan Av., Chicago 11, Ill.

MANUFACTURING PROCESS ENGINEER

Experienced man to work in food plant analyzing manufacturing processes for improvement and/or change. Engineer BS desired or experience with undergraduate engineering education. Reply

P-7343 Food Engineering Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

FOR ADDITIONAL INFORMATION

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Contact The McGraw-Hill Office Nearest You

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R. POWELL *JAckson 3-6951*

BOSTON, 16—350 Park Square
J. WARTH *HUbbard 2-7160*

CHICAGO, 11—520 No. Michigan Ave.
W. HIGGENS *MOhawk 4-5800*

CINCINNATI, 37—2005 Seymour Ave.
F. X. ROBERTS *ELmhurst 1-4150*

CLEVELAND, 13—1164 Illuminating Bldg.
W. SULLIVAN *SUperior 1-7000*

DALLAS, 2—1712 Commerce St., Vaughn Bldg.
G. MILLER *Riverside 7-5117*

DENVER, 2—1740 Broadway, Mile High Center
J. PATTEN *ALpine 5-2981*

DETROIT, 26—856 Penobscot Bldg.
J. GRANT *WOodward 2-1793*

LOS ANGELES, 17—1125 W. 6th St.
R. YOCOM *MAdison 6-9351*

NEW YORK, 3—500 Fifth Ave.
R. OBENOUR D. COSTER R. LAWLESS
OXford 5-5959

PHILADELPHIA, 3—17th & Sansom St.
R. EDSALL H. BOZARTH
Rittenhouse 6-0670

ST. LOUIS, 8—3615 Olive St.
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SAN FRANCISCO, 4—68 Post St.
W. WOOLSTON *DOuglas 2-4600*

Food sterilizing processes . . .

Just Out!

STERILIZATION
in
FOOD TECHNOLOGY

Theory, Practice, and Calculations

By C. Olin Ball, Rutgers U., and F. C. W. Olson, Florida State U.

This important new work describes the theory of the destruction of organic cells by lethal energy; shows the development of mathematical methods predicting such destruction; and describes past and present practice in the commercial use of sterilizing processes applied to canned foods. The prediction of the destruction of desirable elements such as vitamins and organoleptic quality factors also is covered. The mechanism of the two steps involved in transferring heat from steam into a substance within a closed container is analyzed. 653 pages, illustrated, $16.00

These books will help you

FOOD PLANT SANITATION

Helps you set up and maintain safe sanitation practices throughout your plant; protects you from legal liabilities; shows how to control pest contamination. By Milton E. Parker, 434 pp., 129 illus., $7.50

COMMERCIAL FRUIT AND VEGETABLE PRODUCTS

Provides commercial canners and others with a thorough treatment of the application of scientific principles to manufacturing and preserving processes. By W. V. Cruess. 906 pp., illus., $12.00

FREE EXAMINATION

McGraw-Hill Co., Inc., Dept. Food-3
327 W. 41st St., N. Y. C. 36

Send me book(s) checked below for 10 days' examination on approval. In 10 days I will remit for book(s) I keep, plus few cents for delivery costs, and return unwanted book(s) postpaid. (We pay delivery costs if you remit with this coupon—same return privilege.)

☐ Ball & Olson—Sterilization in Food, $16.00
☐ Parker—Food Plant Sanitation, $7.50
☐ Cruess—Commercial Fruit & Veg., $12.00

(PRINT)
Name .....
Address .....
City .....Zone.....State.....
Company .....
Position .....

For price and terms outside U. S. Write McGraw-Hill Int'l., N. Y. C. Food 3

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — EQUIPMENT - USED or RESALE

RATES

UNDISPLAYED

$1.80 a line, minimum 3 lines. To figure advance payment count 5 average words as a line. BOX NUMBERS count as one line additional in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

DISPLAYED

The advertising rate is $16.00 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request. AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADS or Inquiries to Classified Advertising Division of Food Engineering, P. O. Box 12, N. Y. 36, N. Y. April issue closes March 27th

SPECIAL SERVICES

Rebuild those leaking valves!! Sanitary valves rebuilt for a fraction of the cost of a new valve. Prices submitted on request. Stuart W. Johnson & Co., 611 Main Street, Lake Geneva.

Filling Time Available—Complete automatic washing, filling and labeling line for filling gallon glass bottles. References furnished. Direct inquiries to The Nedlog Company, 3224 N. Elston Avenue, Chicago 18, Illinois.

FOR LEASE

For Lease—Complete vegetable and strawberry processing plant, and other modern processing machinery, including Package Machinery Corp. automatic wrapping machine, all housed in modern building located in center of industrial section of Central Arkansas. Quick Freezing Plant with 40 Tons daily capacity at —30°, and Cold Storage Warehouse with capacity of 300,000 cubic feet located on property and available for use. Railroad siding and truck dock available. For details write FL-6424, Food Engineering.

SEARCHLIGHT Equipment Spotting *SERVICE*

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate rebuilt and used Food processing equipment not currently advertised. (This service is for USER-BUYERS only.) No charge or obligation.

How to use: Check the dealer ads to see if what you want is not currently advertised. If not, send us the specifications of the equipment and/or components wanted on the coupon below, or on your own company letterhead to

SEARCHLIGHT EQUIPMENT SPOTTING SERVICE
Food Engineering, Classified Advertising Division, P.O. Box 12, N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment, Spotting Service
c/o Classified Advertising
Food Engineering,
P.O. Box 12, N. Y. 36, N. Y.

Please help us locate the following equipment:

.....
.....

NAME .....TITLE .....
COMPANY .....
STREET .....
CITY ..... ZONE.... STATE.....

FE-3/58

FOR SALE OR LEASE

Plant—over 8,000 square feet plus other buildings

4,000 square feet in main building with tile walls and floors and a 16 foot ceiling. Adjoining rooms have approximately another 4,000 square feet of storage and office space—high pressure steam boiler with standby unit.

Over two acres of land with several other buildings and a large parking lot—280 foot road frontage—property located in the Morristown area, Somerset County, New Jersey near the D. L. & W. Railroad and Route 202—address all replies to:

J. H. ROBERTS
33 Mill Street Bernardsville, New Jersey

JOB LOTS WANTED

Will buy for cash, closeouts and discontinued items, all types paper, containers, plastics—or what have you.

W-6948, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED

Stainless steel laboratory size SPRAY DRYER

W-7110, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

WANTED

Good—Used—Equipment

- **Lard Filling**
- **Votator Equipment**

Reply W-7055, Food Engineering
Class. Adv. Div., P.O. Box 12, N.Y. 36, N.Y.

CONTRACT WORK WANTED

SIRUPS

Produced To Your Requirements

Well known, highly reputed food company in New York area has surplus capacity available for manufacturing food sirups. Excellent plant with outstanding laboratory control facilities. Ample railroad sidings and other advantages. Invite inquiries and the opportunity to discuss your specifications and needs.

CWW-7260, Food Engineering
Class. Adv. Div., P. O. Box 12, N. Y. 36, N. Y.

LATE MODEL PACKAGE MACHINERY

Transwrap, Model "B" and "C"-Net Weight and Volumetric.

Package Machinery, Models FA, FA2, F10J Bundler also Hayssen, Scandia.

Battle Creek, Model 43 w/Eye & Model 46.

Resina Capper, High Speed and Single.

Pneumatic Straight Line 20 Head Filler.

Pneumatic, Pony, World Labelers.

Horix, Karl Keifer, Ertel Fillers.

Pneumatic Scale High Speed Cartoning Line (New in Original Crates)

Pneumatic Scale Cartoning Line-30 CPM.

Standard Knapp #429 Case Sealers.

SELL US YOUR SURPLUS EQUIPMENT

R P M INC.
254 - 36TH STREET
BROOKLYN 32, NEW YORK
STerling 8-1550

IN STOCK AT LOEB'S . . . .

Cappers: Capem C-4-F, 48 m.m.
Centrifugals: Fletcher 12" copper, 17" stainless, 20" lithocoated, Tolhurst 26" rubber.
Clarifiers: De Laval and Sharples, st. st.
Dryers: Link Belt Mono Tube, monel.
Dryer: Devine 2 x 4 vac. drum st. steel.
Dryer: Bowen lab. spray, st. steel.
Dryer: Direct Heat 4' x 20'.
Dryer: Nordyke-Marmon 120 bu.
Fillers, liquid: vacuum, siphon, gravity.
Fillers, piston: Stokes, Colton, Elgin, Filler Machine Co. for jars, tubes.
Fillers: M & S for cans 6 and 10 pocket, st. st.
Fillers, powder: Speedee, Triangle, Stokes & Smith, Ferguson, Gump.
Filter Presses: Sperry, Shriver 6"-36", recessed and plate and frame types.
Filters: Int. pressure—Alsop, Sparkler, Lomax, Sweetland with 30 24" st. st. leaves.
Filters: Rotary Vacuum—Elmco, Oliver, Bird.
Homogenizers: Manton-Gaulin 25 GPH., 60 GPH., 300 GPH., Flowmaster model 200.
Kettles: Dopp 150 gal., jkt. 20 hp. s. s. agit.
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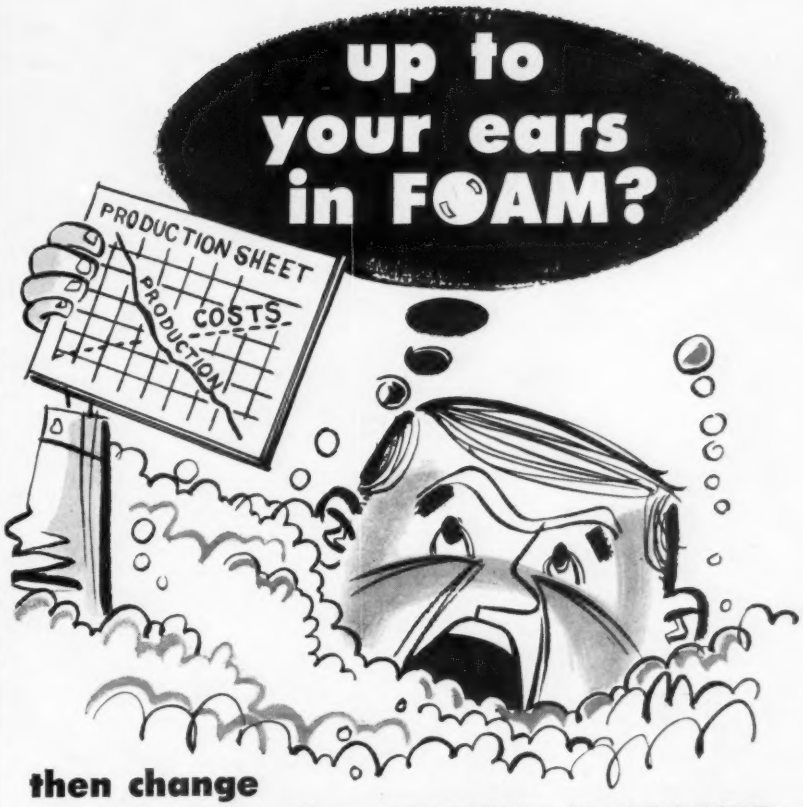

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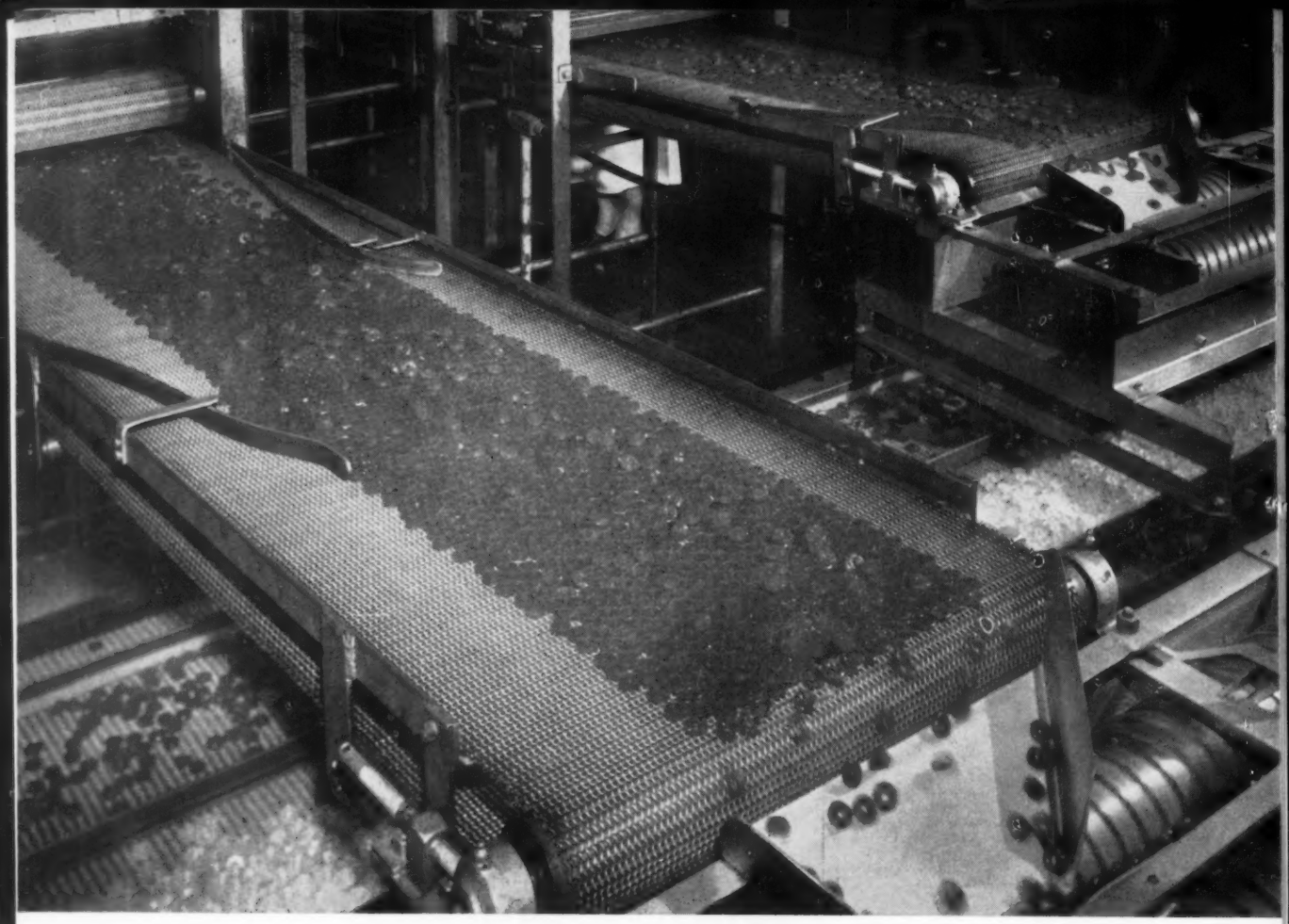

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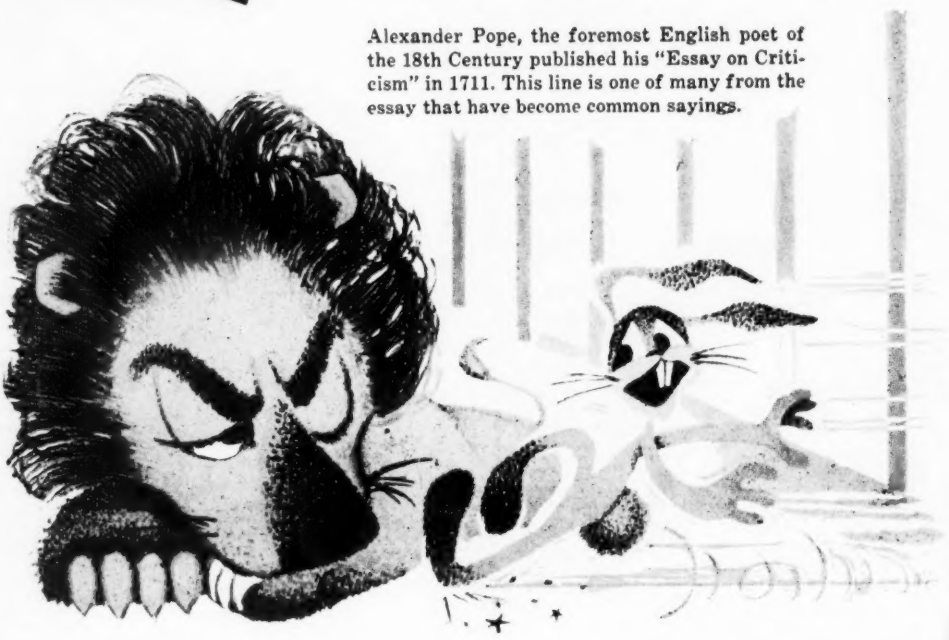
"Fools rush in where angels fear to tread"

Alexander Pope, the foremost English poet of the 18th Century published his "Essay on Criticism" in 1711. This line is one of many from the essay that have become common sayings.



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